THE MARKET POTENTIAL FOR SHORT HARDWOOD LUMBER FROM THE EASTERN ONTARIO SAWMILLING INDUSTRY

Eastern Ontario Development Program

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The conclusions and recommendations in this report are those of Lamb, Guay Inc. They do not necessarily reflect those of the Ministry of Natural Resources, the Department of Regional Economic Expansion or the members of the Forestry Committee of the Eastern Ontario Subsidiary Agreement.

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EXECUTIVE SUMMARY

Background

Years of high grading of hardwood logs have depleted the reserves of quality logs in the Eastern Ontario region, and the sawmill operators are faced with the conversion of inferior grade hardwood logs into saleable lumber. The log yield of quality hardwood lumber is, therefore, diminishing, and is affecting the long-term viability of this industry. Operators are also finding it increasingly difficult to maintain acceptable quality standards in their products.

There is a serious void in basic data and information concerning the use of the hardwood resource, and the efficient operation of the hardwood sawmilling industry in Eastern Ontario. Sawmill operators and various government agencies have concluded that there is an opportunity to remedy this industry problem. Consequently, this study was commissioned by the Ontario Ministry of Natural Resources, and the Federal Department of Regional Economic Expansion, under the Canada/Ontario Eastern Ontario Subsidiary Agreement. The intent was to evaluate the hardwood lumber industry in Eastern Ontario, and investigate the markets for short hardwood lumber. The further intent was to identify opportunities for improved utilization of the hardwood forest in the region, and assist in establishing policies and programs to stimulate the investment required to convert, or add equipment, for short log processing by industry participants.

Hardwood Lumber

The production of hardwood lumber in Canada has remained relatively static (with year-to-year fluctuations) since 1950. Production was 601 MM fbm in 1980. Ontario represented 44.5%, and Quebec, 40.8% of this production. Canada is a net importer of hardwood primarily of species unavailable in Canada.

Eastern Ontario has traditionally represented about 35% - 40% of Ontario hardwood production.

Apparent consumption of hardwood lumber in 1979 for Ontario was 231.9 MM fbm, and Quebec, 231.6 MM fbm. These two regions traditionally account for about 90% of consumption in Canada. Long-term demand for hardwood lumber to the year 2000 indicates an increase of about 4.2% per year, with imports increasing, resulting in a moderate long-term domestic production increase of about 2.7% per year.

Markets

Within the geographic regions of Ontario and Quebec (including exports to Northeastern U.S.), the Consultants estimate that total hardwood lumber shipments from Ontario/Quebec mills were about 319 MM fbm in 1979. LAMB, GUAY INC. believes the incremental market penetration potential for short hardwood lumber is about 17% of total shipments. Thus, the potential incremental short hardwood volume is about 54 MM fbm per year. This conversion estimate must be understood in the context that both end-users and brokers/wholesalers who were interviewed indicated little interest in increased supplies of short hardwood lumber. They are basically satisfied under current arrangements utilizing longer lumber. Considerable end-user education and market development would be required to achieve the 17% penetration estimate. (Details provided in Section 3.)

The household furniture industry is estimated to account for about 31% of the hardwood lumber consumed in the defined regions. This is the biggest end-user category and interviews suggest these types of manufacturers would accept modest increases in supplies of short hardwood lumber under certain specific conditions (high quality material only).

The other end-use industry which offers potential for accepting more short hardwood lumber are pallet/skid and wood container manufacturers. This is the third largest category (16.3% of estimated consumption). Interviews suggest they would accept increased quantities of low grade short hardwood lumber.

Investigation of the market mechanisms for hardwood lumber indicated that the broker/wholesaler plays an important role between mill and end-users. Therefore to identify specific furniture manufacturers, and pallet manufacturers interested in short hardwood lumber it would probably be necessary for mills to rely heavily on intermediate distributors in the marketing of the material.

The above factors lead the Consultants to conclude that the market opportunity for increased usage of short hardwood lumber is limited.

Eastern Ontario Sawmills

The Eastern Ontario hardwood sawmill industry is an industry comprised mostly of small operations producing less than 2 MM fbm per year. Seventy-eight percent of the 102 sawmills interviewed by LAMB, GUAY INC. fell into this size classification. There are only 5 - 15 mills in the region that could realistically consider short log processing. However, these larger "B" and "C" size mills (14 out of 102) do account for about 67% of the employment and 78% of the total output of mills interviewed. Therefore, government policy directed at these few larger mills will have the greatest impact on the hardwood sawmill industry in Eastern Ontario.

Visits to mills in Northeastern U.S. did not provide clear direction for Eastern Ontario operators. Short log mills in the New England States are specialized captive mills for specific end-users. Mills in the New York/Pennsylvania area have little interest in short log processing, due to sufficient supplies of conventional sized logs.

Short Log Technology

At present, there is little short hardwood log processing capability in Eastern Ontario. Of the 102 mills interviewed, only 4 were found which could process short logs, but only in a limited manner.

The Consultants have concluded that the only type of short log operation which makes sense for Eastern Ontario conditions would be for a conventional sawmiller to operate a specialized mill which would accept 8' pulpwood bolts. This mill should emphasize simplicity and productivity. The pulpwood bolts would be upgraded to furniture dimension, pallet stock, and industrial lumber. Residue material would be chipped under contract to a pulp mill. This specialized short log mill could also accept short hardwood lumber from other mills in the area, and aid in marketing this otherwise unsaleable material.

The capital costs of the type of operation proposed by the Consultants would be in the vicinity of $2,000,000. This severely limits the number of Eastern Ontario sawmillers who could consider building such a facility. Only a detailed feasibility study(ies) could determine whether such a mill would provide adequate returns to a specific sawmiller (given his specific strengths/weaknesses), in relation to the market opportunities described previously.

Conclusions

LAMB, GUAY INC. feels that the most appropriate action on the part of the Forestry Sub-Committee, if it wishes to encourage increased short log processing, is to approach a few of the larger hardwood sawmillers in Eastern Ontario to solicit their interest in proceeding with more specific feasibility investigations. These studies would be to ascertain whether a specialized short log sawmill, run as an addition to the sawmiller's current operation, would be profitable. The data presented in this report can be used as background to specific feasibility studies.

The Committee should also ensure that if such feasibility investigations are positive, that appropriate government incentives (such as ODC and DREE) are made available to individual operators.

The Committee can also, perhaps, act as a catalyst to marketing, by soliciting interest in short hardwood lumber usage among selected end-user industries (as identified in this study), and brokers/wholesalers interested in developing a new market. This will provide the necessary link between the sawmillers and the marketplace.

LAMB, GUAY INC. does not see the opportunity for increased short log processing as attractive enough to warrant encouraging large scale conversion of the small hardwood sawmillers in the region to short log operations.

It is only through the support of a select few sawmill operators ready to process short hardwood logs in Eastern Ontario, that the Committee can move realistically toward its goal of fuller utilization of the hardwood forests in the area.

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1.0 INTRODUCTION

1.1 Background

The background and rationale for this report is expressed by the Consultant Terms of Reference drawn up by the Forest Program Sub-Committee, Canada-Ontario Eastern Ontario Subsidiary Agreement:

> "Various statistics show that Canada is a net importer of hardwood lumber. In 1979, for example, Canada exported a total of 111 million board feet of hardwood lumber of various species worth approximately $80 million, while importing 234 million board feet, valued at $126 million. While some of this material is imported to satisfy specific consumer tastes as, for example, for products manufactured by the furniture industry, Canada also imports a variety of finished hardwood products that could be manufactured domestically. Imports of woodware, wooden handles, turnery, flooring, and other millwork products into Canada in 1979, for example, were valued at about $44 million. There are cases, as well, where Canadian grown species could be substituted for imported species.
>
> Many Ontario secondary wood-using industries import and utilize varying quantities of hardwood lumber and semi-finished wood products. In 1979, Ontario imported 95 million board feet of hardwood lumber valued at $49 million, while exporting 53 million board feet valued at approximately $34 million. There appears to be potential for Ontario hardwood lumber manufacturers, and particularly for those located in Eastern Ontario, to expand their market not only in Ontario, but in various regions of Canada and, possibly, some regions in the United States.

The extensive forest lands of Eastern Ontario have historically supported a substantial sawmilling industry. The present industry still makes a significant contribution to the economy of Eastern Ontario, and supports many small single-industry communities throughout the region. However, selective cutting practices on both Crown and private land in the past have successively removed the best timber, and left inferior stands on hundreds of thousands of acres. The stands are presently less than desireable for quality lumber production and are hence, affecting the long-term viability of the industry. Many mills presently have difficulty in marketing standard factory lumber processed from low quality, small diameter 8 to 16-foot logs."

Recent investigations by LAMB, GUAY INC. in the Eastern Ontario region have revealed that 8' hardwood bolts of saw-log quality are often destined to pulp mills. These bolts could perhaps be more effectively used at a short log sawmill for dimension lumber. It was observed, particularly in the past two years, that the private hardwood forest stands are increasingly being processed into firewood for the urban markets at a much lesser return than would be the case for sawmills.

If short logs could be sawn rather than chipped and the lumber used in lieu of components from longer lengths, improved utilization of the forest could result. This would occur because long lumber would be only used for applications where there was no substitute, thereby minimizing waste.

There is a serious void in basic data and information concerning the use of the hardwood resource, and the operation of the hardwood sawmilling industry in Eastern Ontario. Sawmill operators and various government agencies have concluded that there is an opportunity to remedy this industry problem. Consequently, this study was commissioned by the Ontario Ministry of Natural Resources, and the Federal Department of Regional Economic Expansion under the Canada/Ontario Eastern Ontario Subsidiary Agreement. The intent was to evaluate the hardwood lumber industry in Eastern Ontario, and investigate the markets for short hardwood lumber. The further intent was to identify opportunities for improved utilization of the hardwood forest in the region, and assist in establishing policies and programs to stimulate the investment required to convert, or add equipment, for short log processing by industry participants.

1.2 Objectives

The overall objective of this study is to identify new marketing opportunities, and propose development strategies for hardwood sawmills in Eastern Ontario. The study was also designed to provide the basis for an industry dialogue, bringing governments and sawmill operators together to develop methods of improving the competitiveness of their industry.

Specifically, the study was to focus on three major components of the industry, namely:

- To describe and discuss the operations of sawmills in Eastern Ontario.

- To identify the market and marketing opportunities for short log lumber in Canada, and the Northeastern United States.

- To discuss the state of short log sawmilling methods, and opportunities for improved efficiency in the Eastern Ontario industry.

1.3 Product Flow

In order for the reader to clearly understand the methodology employed by the Consultants for collecting the required study data, it is useful to describe the current "product flow" for the hardwood lumber industry.

Figure 1 depicts the hardwood lumber processing industry in Ontario, identifying the major linkages in the distribution chain.

1.4 Scope and Methodology

1.4.1 Work Plan

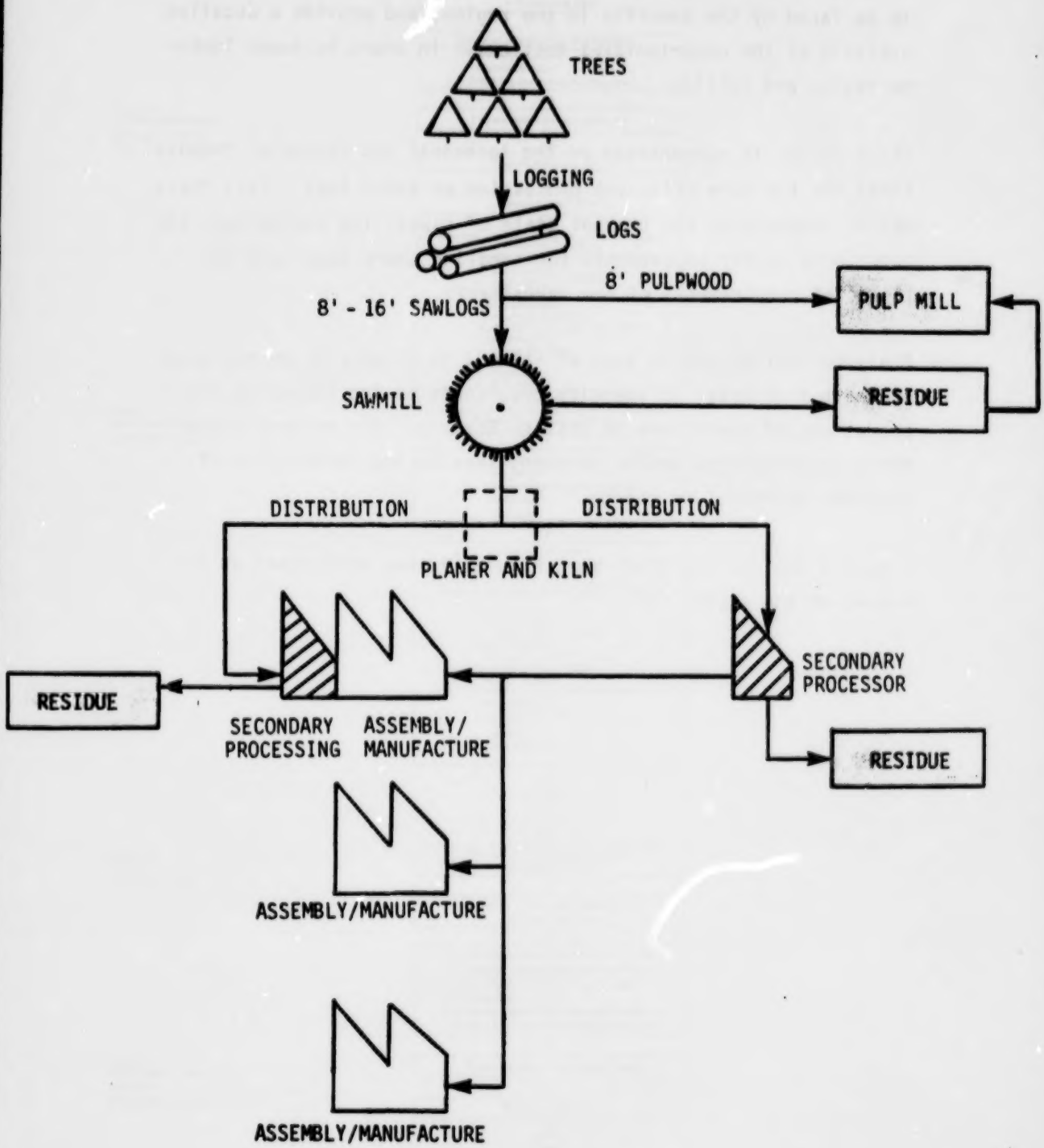
In order to achieve the objectives set forth in Section 1.2, the study was designed to be completed through five distinct phases.

Phase 1 was to establish the study parameters more precisely, and define the in-depth information requirements. The Study Team was to familiarize itself with the structure of the industry, it's size and production, the short log sawmill industry in Eastern Ontario, and the general hardwood market in Ontario.

Phase II of the study was to focus on the existing structure of the sawmill industry. Extensive research activities were planned in order to assess the nature of the industry in Ontario. This was to be compared to the nature and characteristics of the industry in other regions of the North American continent.

FIGURE 1

FLOW CHART DESCRIBING HARDWOOD LUMBER PRODUCTION AND UTILIZATION



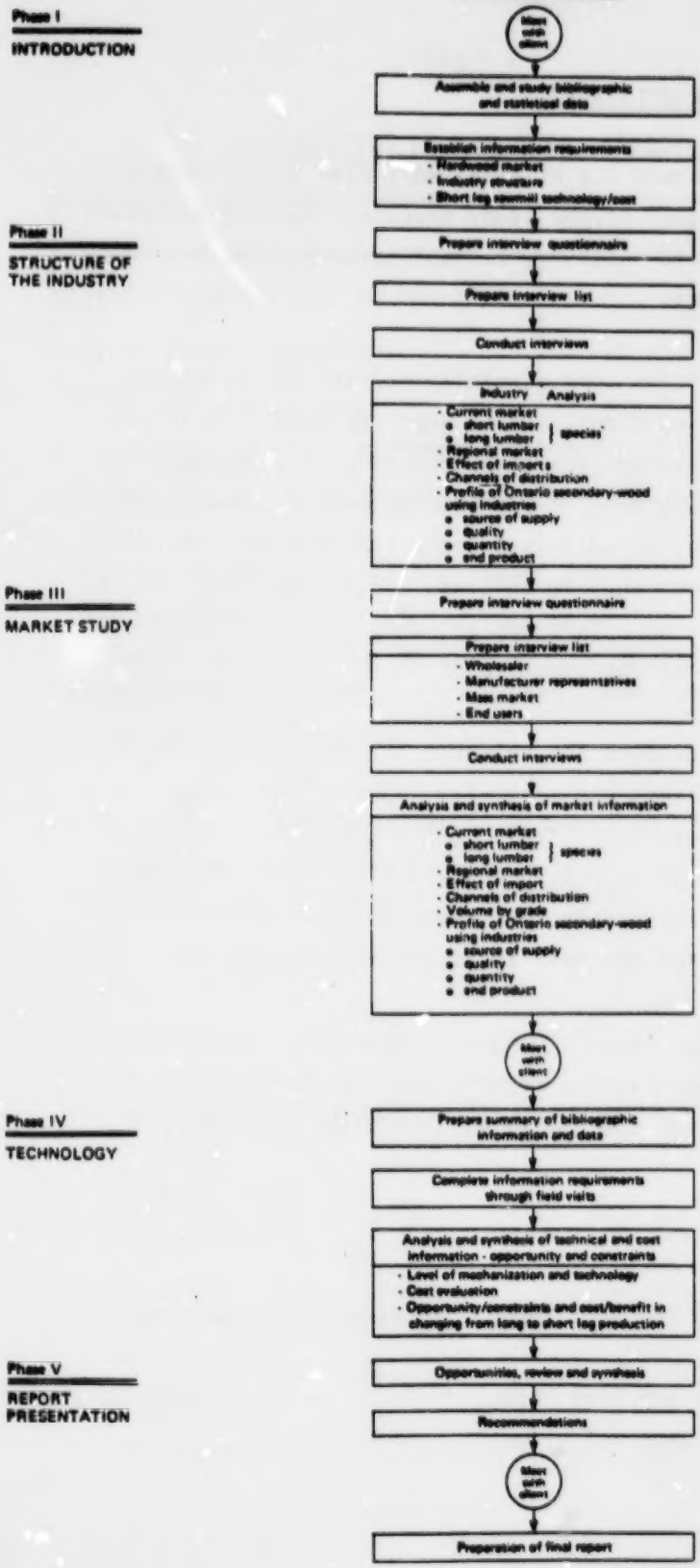
Phase III was to encompass the marketing variables and challenges to be faced by the sawmills in the region, and provide a detailed analysis of the opportunities that exist in short hardwood lumber marketing and selling.

Phase IV was to concentrate on the technical and financial requirements for the more efficient processing of short logs. This Phase was to investigate the present state of sawmilling technology, the opportunities for adjustments for handling short logs, and the financial requirements of new investments.

Analyses carried out in each of Phase I to IV were to be regrouped in Phase V in order to identify opportunities for improving the operations of sawmillers in Eastern Ontario. The recognition of these opportunities would, in turn, lead to the formulation of programs to stimulate change.

Figure 2 depicts the Study Work Plan as it was envisioned at the outset of the study.

FIGURE 2
STUDY WORK PLAN



1.4.2 Research Activity Accomplished

LAMB, GUAY INC. followed the original Work Plan quite closely through the five phases of the study process. As with any study of this type, the data necessary was collected from both primary and secondary sources.

All available statistics were carefully identified, acquired, and synthesized to avoid duplication when the primary data was collected. This involved extensive contact with government bodies in both Canada and the U.S. Trade associations and trade publications were contacted, as well as private industry sources, for their printed information. To this was added LAMB, GUAY INC.'s own library information. This was all compiled and digested to provide an overview of the situation.

LAMB, GUAY INC. also collected valuable primary information through extensive direct contacts with industry participants via personal and telephone interviews. LAMB, GUAY INC. felt it was particularly important to obtain current first hand information from those people involved in the hardwood lumber industry, especially in relation to their attitudes and perceptions.

The Consultants interviewed 239 sawmill operators, wholesalers/brokers, and end-users across Ontario and the Northeastern United States. Table 1 shows the number of interviews by category.

TABLE 1

INTERVIEWS CONDUCTED BY CATEGORY

	PERSONAL	TELEPHONE	TOTAL
Eastern Ontario Sawmill Operators	42	60	102
U.S.A. Sawmill Operators	26	-	26
Distributors/End-Users	49	62	111
TOTAL CONTACTS	117	122	239

This report is an analysis of extensive field interviews, secondary data, and the opinions of industry observers. The information collected was carefully weighed by the industry and research experience of LAMB, GUAY INC. This report, therefore, presents our best judgement and interpretation.

Questionnaires and Interview Guides used for the collection of data can be found in Appendices of this report. These appendices include guides for interviews with sawmill operators, distributors, and end-users.

1.5 Definitions

For purposes of this study, the Consultants used the following definitions:

- Short Lumber : Lumber 8' or less in length.
- Semi-Dimension Lumber : Lumber that has been rough sized.
- Dimension Lumber : Lumber that has been accurately sized, usually for specific applications.

- MM fbm : Millions of feet, board measure.

- RWRL : Random width, random length.

- Broker : Agent engaged in selling wood products to end-users, but who does not take possession of these products, or maintain inventories.

- Wholesaler: A business engaged in selling wood products to end-users and retail establishments. He maintains a product inventory purchased from primary suppliers.

- Bolt : A short log, 8' or less.

- Sawlog : A log of suitable size for sawing into lumber, 8' or longer.

- Definition of sawmill size classifications:

ANNUAL PRODUCTION (MM fbm)	CODE
> 25.0	A
10.0 - 24.9	B
5.0 - 9.9	C
2.0 - 4.9	D
1.0 - 1.9	E
< 1.0	F

- Eastern Ontario : The Regional Municipality of Ottawa-Carleton, the United Counties of Stormont, Dundas and Glengarry, the United Counties of Prescott and Russell, the United Counties of Leeds and Grenville, and the Counties of Frontenac, Hastings, Lanark, Lennox and Addington, Prince Edward, and Renfrew.

- NHLA : National Hardwood Lumber Association.

Figure 3 below shows the study area in relation to the rest of Ontario.

FIGURE 3

ONTARIO MINISTRY OF NATURAL RESOURCES - ADMINISTRATIVE REGIONS AND DISTRICTS

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2.0 HARDWOOD INDUSTRY IN CANADA

This section provides an overview of the Canadian hardwood lumber industry in Canada. The topics covered are production, imports, exports, and apparent domestic consumption. The data was collected from various government agencies, as well as LAMB, GUAY INC. industry interviews. In order to have all data directly comparable, we selected 1979 as the most suitable base year, as this is the most recent year for which all necessary information can be obtained. Where available, more recent information will be presented, but it is not directly comparable, due to different sources of data.

For the purpose of this report, apparent domestic consumption has been calculated by taking shipments, subtracting exports, and then adding on imports. The Consultants decided to use shipments rather than production, in an attempt to minimize the effects of inventory build-up.

2.1 Canada

2.1.1 Production

Overall production of hardwood lumber in Canada has not increased significantly over the past 30 years. In 1980, production was only 35.4% higher than in 1950, and in 1979, only 8% higher. This relatively small increase over a 30 year period hides sizeable annual fluctuations. During this period, production varied from a high of 630 MM fbm in 1973, to a low of 421 MM fbm in 1975. (See Table 2).

TABLE 2

CANADIAN HARDWOOD LUMBER PRODUCTION 1950 - 1980

(MM fbm)

YEAR	PRODUCTION	% CHANGE
1950	447	-
1963	468	+ 5
1968	589	+26
1973	630	+ 7
1974	611	- 3
1975	421	-31
1976	510	+21
1977	440	-14
1978	556	+26
1979	482	-13
1980	601	+25

SOURCE: Statistics Canada, Cat. No. 35 - 204.

Annual production of hardwood lumber in 1980 was 601 MM fbm, up 25% over the 1979 figure of 482 MM fbm. In this report, the 1979 figure will be used to provide a common basis for comparison. Therefore, while a figure of 482 MM fbm is used as the total per annum Canadian hardwood production, it is important to bear in mind that the 1980 figure is 25% greater.

The increase in 1980 production may be partly explained by an increased amount of hardwood lumber going to the furniture industry. In 1980, consumer preference changed to solid hardwood furniture. This brought on increased demands for hardwood lumber from the manufacturers who increased volume in 1980.

2.1.2 Import/Export

Canada is currently a net importer of hardwood lumber. The great majority of imported hardwood lumber imports comes from the United States. In 1980, Canada imported 184 MM fbm or 60% more than it exported. In 1979, Canada imported roughly double the total of its exports, for a balance of trade of -116 MM fbm. This is in contrast to the situation of the 1950's and 1960's, where a positive trade balance existed. Table 3 provides details.

TABLE 3

CANADIAN HARDWOOD LUMBER EXPORTS AND IMPORTS - 1950 - 1980
(MM fbm)

YEAR	EXPORTS	IMPORTS	BALANCE OF TRADE
1950	181	37	+144
1963	126	93	+ 33
1968	142	108	+ 34
1973	147	157	- 10
1974	117	157	- 40
1975	66	139	- 73
1976	92	215	-123
1977	103	197	- 94
1978	126	184	- 58
1979	112	228	-116
1980	116	184	- 68

SOURCE: Statistics Canada, Cat. No. 65 - 202, and 65 - 203.

2.1.3 Apparent Domestic Consumption

Apparent domestic consumption can be calculated by either using shipments or production figures, and then adding imports, and subtracting exports. In this report, shipments have been used in an attempt to minimize the effect of inventory build-up.

Apparent domestic consumption of hardwood lumber in Canada has dropped 12% over the 1973 to 1979 period (Table 4). There was a substantial recovery in 1979, up almost 20% over 1978, resulting in increased production, and a higher level of imports. Industry observers indicate that the late 1981 demand for hardwood lumber is depressed, due to the poor economic environment. Consumption is expected to pick-up as the economic climate improves in the future.

TABLE 4

CANADIAN HARDWOOD LUMBER SHIPMENTS, EXPORTS, IMPORTS, AND APPARENT DOMESTIC CONSUMPTION - 1973 - 1979

(MM fbm)

YEAR	SHIPMENTS	EXPORTS	IMPORTS	CONSUMPTION	% ANNUAL CHANGE
1973	576	147	157	586	
1974	479	117	157	519	-11
1975	341	66	139	414	-20
1976	342	92	215	465	+12
1977	331	103	197	425	- 9
1978	357	126	184	415	- 2
1979	398	112	228	514	+24

SOURCE: Statistics Canada, Cat. No. 35 - 204, 65 - 004, and 65 - 007.

In 1979, Canada consumed 514 MM fbm of hardwood lumber, a large portion going to the furniture industry. A further breakdown of consumption by individual end-use industry appears in Section 3.3.

2.2 Ontario/Quebec

2.2.1 Production

Sawmills in the Provinces of Ontario and Quebec are the major hardwood lumber producers in Canada. In total, they produced an average of 87.5% of all hardwood lumber in Canada between 1977 and 1979 (Table 5). The two provinces produce roughly equal volumes of hardwood lumber annually, an average of approximately 216 million feet each per year, or 44% of total Canadian output.

The hardwood species mix for the two provinces are also very similar. Maple is the most common, accounting for roughly 60% of each province's hardwood lumber production, followed by birch and poplar, each accounting for 14%, oak at 7%, and elm at 2%. The species breakdown for Ontario is presented in Table 6.

TABLE 5

ONTARIO AND QUEBEC PRODUCTION OF HARDWOOD LUMBER

(MM fbm)

YEAR	PRODUCTION			% OF CANADA		
	ONTARIO	QUEBEC	CANADA	ONTARIO	QUEBEC	ONTARIO + QUEBEC
1977	194.7	187.5	439.9	44.3	42.6	86.9
1978	237.8	264.6	555.5	42.8	47.6	90.4
1979	214.0	196.6	481.4	44.5	40.8	85.3
AVG. '77 - '79	215.5	216.2	492.3	43.9	43.6	87.5

SOURCE: Statistics Canada, Cat. No. 35 - 204.

TABLE 6

LUMBER PRODUCTION BY SPECIES OF ONTARIO SAWMILLS - 1966 - 1980

(MM fbm)

YEAR	BIRCH	ELM	OAK	MAPLE	POPLAR
1966	45.45	31.56	6.60	100.76	13.63
1967	45.60	31.70	N/A	110.50	13.20
1968	43.80	23.70	N/A	103.30	13.80
1969	42.40	32.80	N/A	104.10	16.60
1970	32.20	26.60	N/A	93.00	15.40
1971	32.30	16.80	N/A	100.60	13.00
1972	37.27	15.97	N/A	115.36	14.95
1973	28.06	13.04	N/A	124.34	32.15
1974	36.53	10.91	N/A	135.49	25.55
1975	25.03	6.77	9.46	95.69	18.75
1976	35.16	15.87	8.86	93.98	18.05
1977	28.74	3.61	11.53	116.75	24.42
1978	28.45	4.08	15.59	129.75	29.55
1979	32.02	2.59	16.51	146.06	35.27
1980	31.25	4.78	14.93	128.60	33.01
ANNUAL % CHANGE '66 - '80	- 2.6	-12.6	+ 6.0	+ 1.8	+ 6.5

SOURCE: Ontario Ministry of Natural Resources

2.2.2 Import/Export

Ontario and Quebec are both net importers of hardwood lumber. Table 7 shows the 1979 imports and exports for the two Provinces.

TABLE 7

ONTARIO, QUEBEC IMPORTS AND EXPORTS OF HARDWOOD LUMBER - 1979
(M fbm)

SPECIES	ONTARIO		QUEBEC	
	IMPORTS	EXPORTS	IMPORTS	EXPORTS
Ash	6,340	-	8,227	-
Basswood	-	859	-	3,113
Birch	-	10,602	-	8,743
Maple	-	24,662	-	7,057
Oak	60,261	-	71,407	-
Poplar	3,840	1,873	1,354	540
Walnut	1,486	-	440	-
Unclassified	30,149	15,444	19,212	20,340
TOTAL	102,076	53,440	100,640	39,793

SOURCE: Statistics Canada - Unpublished Data (Imports and Exports by Province.

The most important imported hardwood is oak, primarily white oak, representing 59% of imports for Ontario, and 73% for Quebec. Other principal species imported are ash, poplar, mahogany, and walnut. The major users of these imports are the furniture and casegood industries.

Maple and birch are the two most important hardwood species exported from Ontario and Quebec. Maple represents 46% of Ontario hardwood lumber exports, and 18% of Quebec. Birch, mainly yellow, accounts for 20% of Ontario, and 22% of Quebec. The "unclassified" category is composed of a variety of species including elm, oak, and beech, and although while combined, they represent a significant proportion, each species, if taken individually, is quite small.

2.2.3 Apparent Consumption

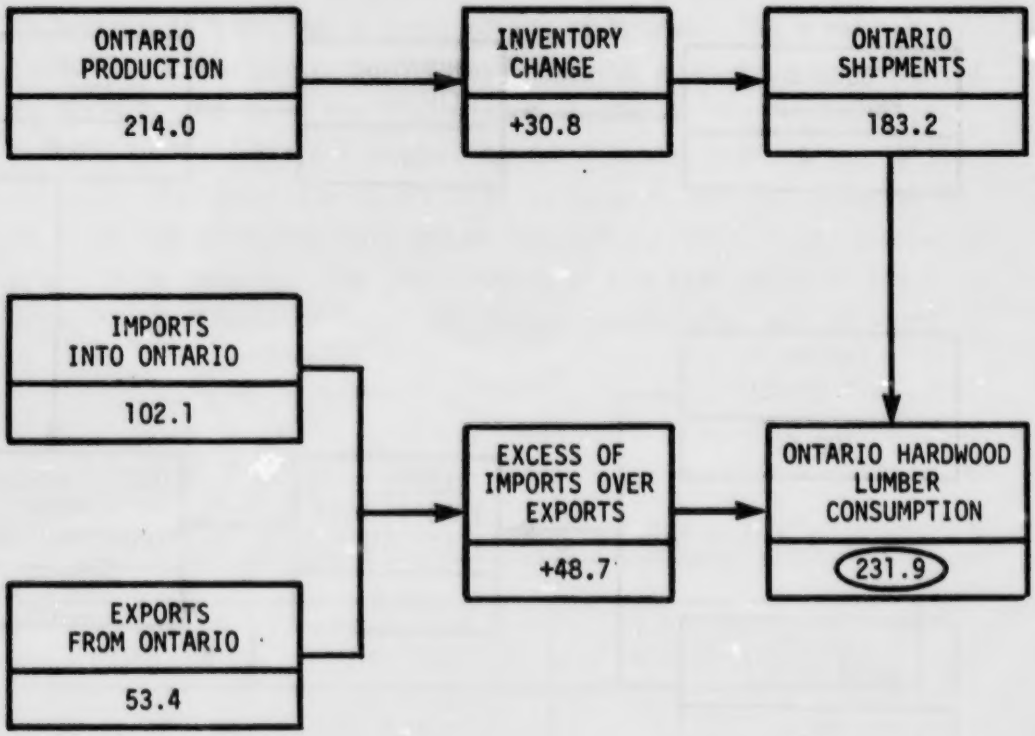
In Figures 4 and 5, the hardwood lumber consumption models for Ontario and Quebec are outlined. Again, the similarity between the two province's hardwood lumber usage is demonstrated. Ontario industry processed 231.9 MM fbm in 1979, and Quebec, 231.6 MM fbm.

Apparent consumption was calculated using the same methodology described in Section 2.1.3, Apparent Domestic Consumption for Canada.

FIGURE 4

MODEL DESCRIBING CONSUMPTION OF HARDWOOD LUMBER IN ONTARIO - 1979

(MM fbm)

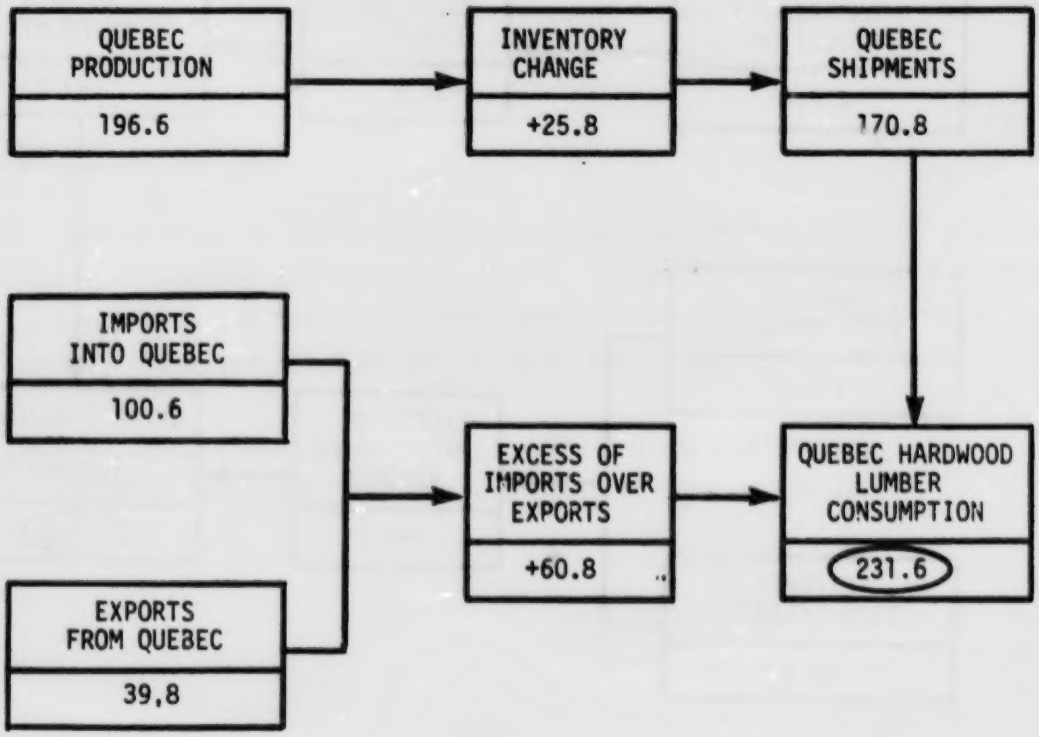


SOURCE: Statistics Canada, Cat. No. 35 - 204.
Unpublished Statistics Canada Data.

FIGURE 5

MODEL DESCRIBING CONSUMPTION OF HARDWOOD LUMBER IN QUEBEC - 1979

(MM fbm)



SOURCE: Statistics Canada, Cat. No. 35 - 204.
Unpublished Statistics Canada Data.

2.3 Eastern Ontario Production

2.3.1 Production

Eastern Ontario mills produced 37.4% of the hardwood lumber produced in Ontario in 1980, for a total of 106,7% MM fbm. The breakdown by species, and the percentage of total Ontario production is presented in Table 8. Maple is the predominant species in the region, representing 39.7% of Eastern Ontario hardwood lumber production. While only 3.6 MM fbm of elm is produced in Eastern Ontario, compared to 51.1 MM fbm of maple, this amount represents 75% of all elm lumber produced in Ontario. The small amount of elm sawn reflects the devastating effects of Dutch elm disease during the last 15 years.

TABLE 8

1980 LUMBER PRODUCTION FROM EASTERN ONTARIO SAWMILLS

SPECIES	PRODUCTION (MM fbm)	% OF 1980 TOTAL ONTARIO PRODUCTION
Birch	8.1	30
Elm	3.6	75.1
Oak	3.7	24.8
Maple	51.1	39.7
Poplar	11.2	33.9
Other	18.6	52.6
Unclassified	10.4	27.6
TOTAL	106.7	37.4

SOURCE: Lamb, Guay, Inc. Interviews
Ontario Ministry of Natural Resources

2.4 Summary

Production of hardwood lumber in Canada has increased only 34.5% from 1950 to 1980. Annual fluctuation in production during the period has varied by as much as 30%. Canadian hardwood lumber production was 482 MM fbm in 1979, and 601 MM fbm in 1980. Canada has developed into a net importer of hardwood lumber. In 1980, for example, Canada exported 116 MM fbm while importing 184 MM fbm. Apparent domestic consumption has dropped in Canada from a level of 586 MM fbm in 1973, to 514 MM fbm in 1979.

Ontario and Quebec's share of total Canadian hardwood lumber production was 85.3% in 1979 (44.5% and 40.8%, respectively). The major species produced in the two provinces is maple, accounting for approximately 60% of total production. The major species imported into Ontario and Quebec is oak, mainly white oak, representing 59% and 73% respectively. Apparent consumption of hardwood lumber in 1979 for Ontario was 231.9 MM fbm, and for Quebec, 231.6 MM fbm.

Eastern Ontario, the specific study area, represented 37.4% of Ontario's hardwood lumber production in 1980. The major species produced in the region is maple, totalling 51.1 MM fbm in 1980. Despite the impact of Dutch elm disease over the last 15 years, almost all of the elm lumber produced in Ontario (75%) comes from this region.

Opportunities may exist for increasing hardwood production through increased utilization of the timber resource by implementing short log processing. This would allow for the processing of hardwood bolts into lumber, and could somewhat lower the current trade deficit in hardwood lumber.

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3.0 MARKET ANALYSIS

The objective of this section is to fully describe the market, and estimate the market potential for short hardwood lumber.

In order to accomplish these objectives, the Consultants of LAMB, GUAY INC. have extensively analyzed information gathered through field interviews and secondary literature searches. The method of collecting and analyzing the data follows the outline as shown in Figure 6. The market study process followed six distinct phases, as outlined below:

Definition of Geographical Markets (Section 3.1)

In Tasks 1 and 2, secondary data was analyzed to determine which regions are major shippers of hardwood lumber. Shipment data from Statistics Canada include exports.

Shipments Within Geographical Markets (Section 3.2)

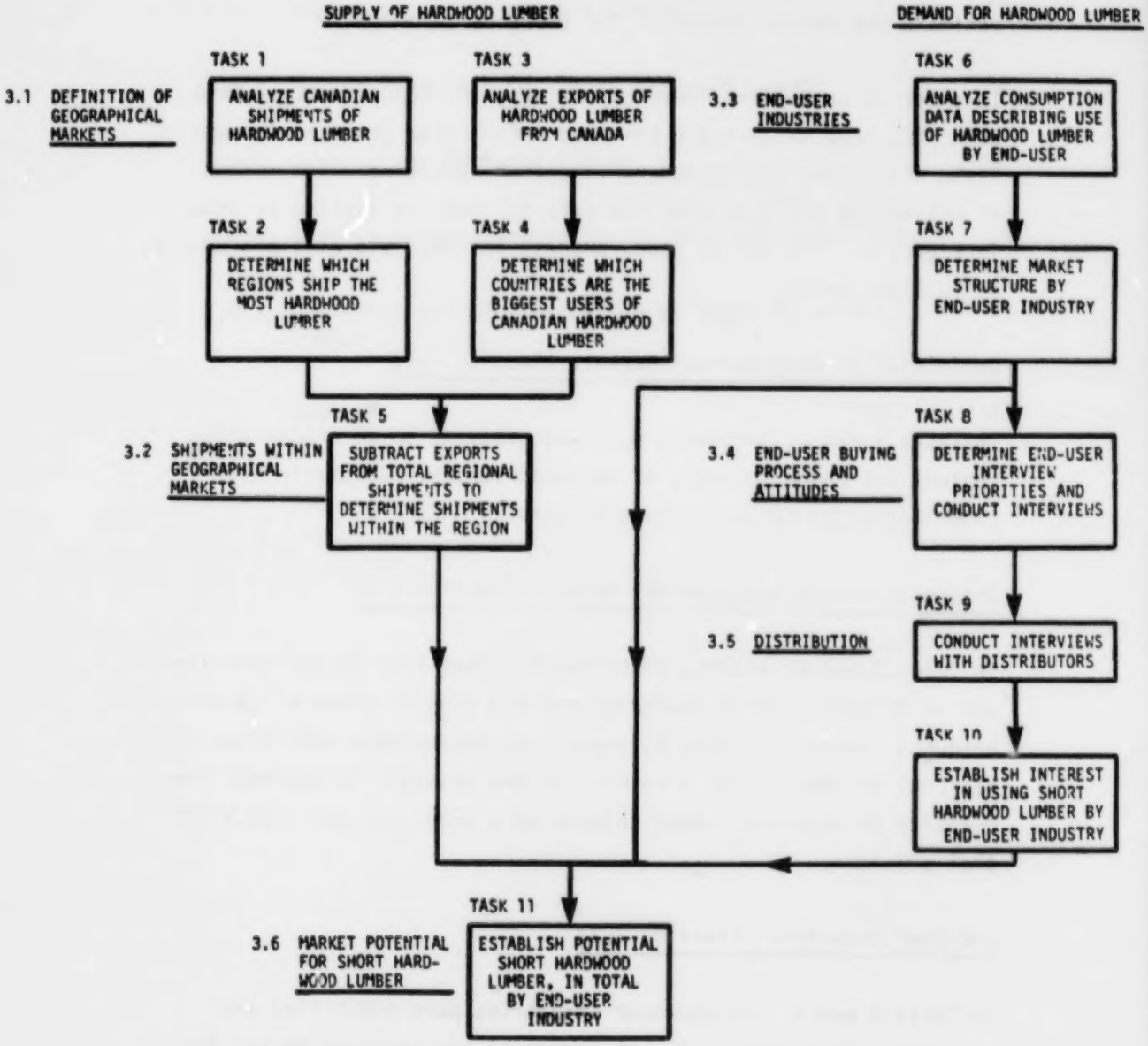
In Tasks 3 and 4, exports of hardwood lumber from Canada were analyzed to determine which countries are the biggest users of Canadian hardwood lumber. In Task 5, exports by region were subtracted from regional shipments. As a result, it was possible to estimate the quantity of hardwood lumber shipped by a province, and used within that province.

End-User Industries (Section 3.3)

In Tasks 6 and 7, the end-user industries were identified and analyzed. As a result, the structure of the end-user market for hardwood lumber was established.

FIGURE 6

FLOWCHART DESCRIBING MARKET ANALYSIS PROCESS



End-User Buying Process and Attitude (Section 3.4)

Based on the end-user analysis mentioned above, LAMB, GUAY INC. could logically determine interview priorities. As a result of this analysis, LAMB, GUAY INC. completed 63 interviews, in 9 end-user industries. This allowed a determination to be made as to the possible market penetration for short hardwood lumber.

Distribution of Hardwood Lumber (Section 3.5)

Interviews were conducted with distributors of hardwood lumber, in order to assess their attitudes and response to the concept of short hardwood lumber.

Market Potential for Short Hardwood Lumber (Section 3.6)

As a result of the analysis of the above sections, the potential market, in total, and by end-user industry, was established for short hardwood lumber.

The following sections will describe this process in greater detail.

3.1 Definition of Geographical Markets

In order to execute Tasks 1 and 2, the percentage of total Canadian shipments for hardwood lumber by region needed to be described. Refer to Table 9.

TABLE 9

SHIPMENTS OF HARDWOOD LUMBER BY REGION - 1979

(MM fbm)

	CANADA	NEW BRUNSWICK	QUEBEC	ONTARIO	OTHER PROVINCES
Shipments	397.8	26.1	171.8	183.2	17.7
% of Total Canada	100%	6.6%	42.9%	46.0%	4.4%

SOURCE: Statistics Canada, Cat. No. 35 - 204.

Together, Ontario and Quebec producers shipped 90% of the hardwood lumber produced in Canada in 1979. For this reason, LAMB, GUAY INC. has considered only Ontario and Quebec in this study because these provinces represent such a large share of the hardwood lumber shipped.

In order to execute Tasks 3 and 4, exports needed to be determined by country. Refer to Table 10.

TABLE 10

EXPORTS FROM ONTARIO AND QUEBEC - 1979

(MM fbm)

	TO: U.S.A.	OTHER	TOTAL
Quebec	19.9	19.9	39.8
Ontario	39.2	14.2	53.4
TOTAL	59.1	34.1	93.2
Exports as % of Total	63.4%	36.6%	100%

SOURCE: Statistics Canada Monthly, December, 1979, 65-004
Statistics Canada Unpublished Data

Exports from Ontario and Quebec to the United States account for 63.4% of total exports of hardwood lumber from these two provinces. The majority of the balance is exported to Europe. LAMB, GUAY INC. has, therefore, excluded European exports from study consideration because viable markets for short hardwood lumber must be within economical shipping distance of the sawmills of Eastern Ontario. While it is acknowledged that the European market does represent some potential, it is regarded as small enough to be excluded. As a result, only the U.S. market shipments were considered.

Based on the above analysis, the relevant geographical markets to consider for Eastern Ontario short hardwood lumber, can logically be inferred to be Ontario, Quebec, and the Northeastern U.S. These regions accounted for about 80% of total Canadian shipments.

3.2 Shipments Within Geographical Markets

Table 11 will serve to explain shipments and exports of hardwood lumber from Ontario and Quebec. Shipments, as reported by Statistics Canada, include total exports. In order to determine what portion of the shipments is used within the province, total exports need to be subtracted from shipments. For U.S. markets, exports from Ontario and Quebec are required.

TABLE 11

SHIPMENTS AND EXPORTS FOR QUEBEC AND ONTARIO - 1979

(MM fbm)

PROVINCE	TOTAL SHIPMENTS	TOTAL EXPORTS (Subtract)	SHIPMENTS USED WITHIN PROVINCE	U.S. EXPORTS (Add)	TOTAL SHIPMENTS IN PROVINCE & U.S. EXPORTS
Quebec	170.8	39.8	131.0	19.9	150.9
Ontario	183.2	53.4	129.8	39.2	169.0
TOTAL	354.0	93.2	260.8	59.1	319.9

SOURCE: Statistics Canada, Cat. No. 35 - 204.
Statistics Canada, Monthly, December, 1979, Cat. No. 65 - 004.
Statistics Canada Unpublished Data.

From Table 11, it can be seen that hardwood lumber used within the province was 129.8 MM fbm. Usage of hardwood lumber produced and shipped within Quebec was 131.0 MM fbm in 1979.

Exports to the U.S. from Ontario and Quebec in 1979 was 59.1 MM fbm. This accounts for about 2.5% of total U.S.A. hardwood lumber usage (1).

By adding the shipments used within the provinces of Quebec (131.0 MM fbm), and Ontario (129.7 MM fbm), with exports of hardwood lumber to the U.S. (59.1 MM fbm), the total hardwood shipments to the defined market in 1979 may be determined. The result of this calculation is 319.9 MM fbm. That is, for sawmills able to service the market area described, the total market consumed 319.9 MM fbm in 1979. Short hardwood lumber can potentially gain some fraction of this figure. (See note).

(1) "Finger Tip Facts and Figures", National Forest Products Association, Washington, D.C., October, 1981.

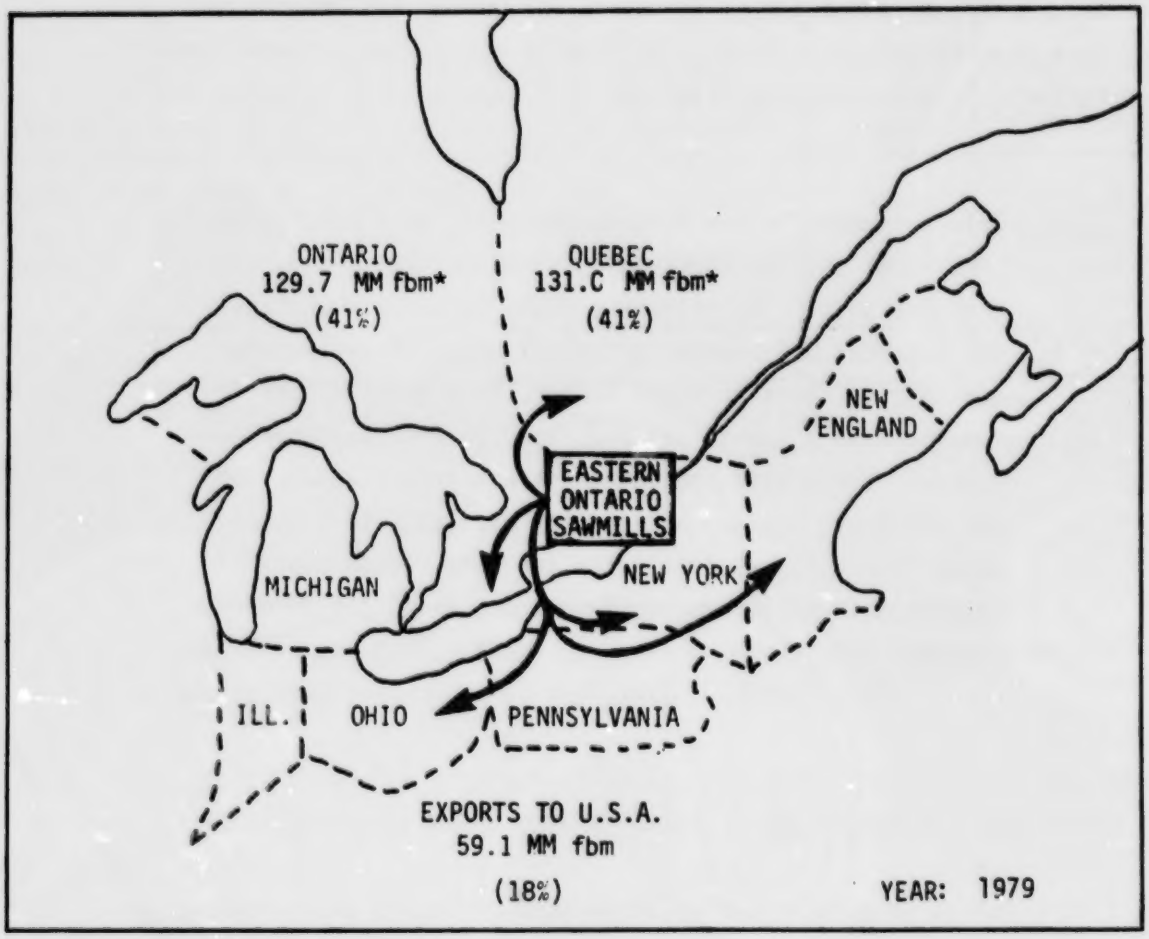
The overall picture of supply may be described in the map in Figure 7. Ontario and Quebec each ship within the province about 41% of the total 319.9 MM fbm. Exports to the U.S. account for 18% of the total.

In summary, hardwood lumber shipments for Quebec and Ontario regions have been determined. Exports of Ontario and Quebec hardwood lumber to the U.S. have been established.

NOTE: Only shipments to the Northeastern U.S. were considered. LAMB, GUAY INC. believes this is appropriate because, to consider total U.S. shipments would severely overstate the apparent U.S. market potential. Specifically, when considering short hardwood lumber, this short lumber functions as a substitute for Canadian long hardwood lumber. Short hardwood lumber is not substitutable for the different species and quality available to U.S. end-users from U.S. sawmills. For the same reason (lack of substitutability), imports from the U.S. to Canada were ignored.

FIGURE 7

REGIONAL MAP OF HARDWOOD LUMBER SHIPMENTS FROM ONTARIO AND QUEBEC



* Shipments, excluding exports.

3.3 End-User Industries

In addition to analyzing the hardwood lumber market by region, it is useful to assess the market on an end-use industry basis. LAMB, GUAY INC. has identified the following industry categories as being important users of hardwood lumber:

- Hardwood handles and turnings.
- Millwork and flooring.
- Kitchen cabinets.
- Wood containers, pallets and skids.
- Household furniture.
- Office furniture.
- Office and store fixtures.
- Coffins and caskets.

Information is available for these industry categories from Statistics Canada for Quebec and Ontario. A similar market structure will be used for regions of the U.S. which are within an economical shipping distance of the sawmills of Eastern Ontario.

Table 12 describes hardwood consumption by end-use industry group for 1979, for Canada, Ontario, and Quebec. Note that this consumption includes imports of hardwood lumber. This Table further confirms the importance of the market regions of Ontario and Quebec to total hardwood lumber consumption in Canada, as about 90% of total Canadian consumption takes place in those provinces.

TABLE 12

HARDWOOD LUMBER CONSUMPTION FOR CANADA, ONTARIO AND QUEBEC BY END-USE - 1979

(MM fbm)

INDUSTRY GROUP	CANADA	ONTARIO	QUEBEC
Hardwood Handles and Turnings (1)	27.7	13.4	13.4
Millwork and Flooring (2)	123.2	55.6	55.5
Kitchen Cabinets (2)	20.6	9.3	9.3
Wood Containers, Pallets and Skids (3)	83.8	37.8	37.9
Household Furniture (4)	157.3	70.9	70.9
Office Furniture (5)	12.5	3.1	5.5
Office and Store Fixtures (6)	24.3	11.0	11.0
Coffins and Caskets (7)	8.8	4.0	4.0
Other	53.6	26.8	24.3
TOTAL CONSUMPTION	513.7	231.8	231.7

SOURCES:

(1) Statistics Canada, Cat. No. 35 - 208.

(2) Statistics Canada, Cat. No. 35 - 205.

(3) Statistics Canada, Cat. No. 35 - 209, CWPCA data

(4) Statistics Canada, Cat. No. 35 - 211, and 35 - 212, as Support.

(5) Statistics Canada, Cat. No. 35 - 212 as support, and Statistics Canada Unpublished Data.

(6) Statistics Canada, Cat. No. 35 - 210.

(7) Statistics Canada, Cat. No. 35 - 204, and Statistics Canada Unpublished Data.

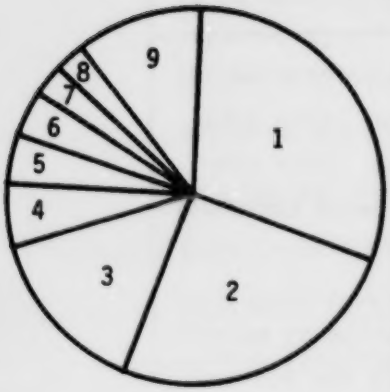
Many of the figures for hardwood lumber consumption in Canada are directly available from Statistics Canada Annuals. However, for household furniture, and office and store fixtures, an approximation was necessary. The Consultants estimated the average cost per M fbm of hardwood lumber for the categories concerned, based on a weighted average of other categories. This weighting was applied to the dollar figures available from Statistics Canada. Total Canadian consumption, and provincial consumption was calculated from Statistics Canada published and unpublished data. The percentage provincial consumption was then applied in equal proportion to all industry end-use categories, except office furniture. This data was obtained from unpublished Statistics Canada data. This pro-rating was necessary since provincial data of hardwood consumption by end-use category was not available.

Table 13 describes the estimated percentage consumption by end-use industry group. This serves to define the nature of the end-use market structure. The Consultants estimate that household furniture and millwork/flooring, represented about 55% of consumption in 1979.

TABLE 13

ESTIMATED CONSUMPTION BY END-USE OF HARDWOOD LUMBER IN ONTARIO AND QUEBEC - 1979

(MM fbm)



INDUSTRY GROUP	% OF TOTAL	CONSUMPTION
1. Household Furniture	30.6	141.8
2. Millwork and Flooring	24.0	111.1
3. Wood Containers, Pallets, Skids	16.3	75.8
4. Hardwood Handles and Turnings	5.8	26.8
5. Office and Store Fixtures	4.7	22.0
6. Kitchen Cabinets	4.0	18.6
7. Office Furniture	1.8	8.6
8. Coffins and Caskets	1.7	8.0
9. Other	11.1	51.1
TOTAL	100%	463.5

SOURCE: Table 12.

By assuming a similar end-use structure for the hardwood lumber exported from Ontario and Quebec to the U.S.A., the total market consumption of hardwood lumber by end-use may be estimated. Table 14 considers only lumber shipped from sawmills in Ontario and Quebec. That is, in considering market potential, imports and exports to non-target regions are excluded.

TABLE 14

ESTIMATED CONSUMPTION BY END-USE OF CANADIAN HARDWOOD LUMBER IN ONTARIO, QUEBEC & NORTHEASTERN U.S.A. - 1979

(MM fbm)

INDUSTRY GROUP	% OF TOTAL	CONSUMPTION
1. Household Furniture	30.6	97.9
2. Millwork and Flooring	24.0	76.8
3. Wood Containers, Pallets, Skids	16.3	52.1
4. Hardwood Handles and Turnings	5.8	18.6
5. Office Furniture	1.8	57.8
6. Kitchen Cabinets	4.0	12.8
7. Office and Store Fixtures	4.7	15.0
8. Coffins and Caskets	1.7	5.4
9. Other	11.1	35.4
TOTAL	100%	319.9

SOURCE: Tables 11 and 13.

3.4 End-User Buying Process and Attitudes

End-users of hardwood lumber were identified and their usage of hardwood lumber determined in the previous section. In order to establish current interest of these end-users in using short hardwood lumber, LAMB, GUAY INC. conducted interviews in Ontario and Quebec, with members of each end-user industry. The structure of the interview schedule was based upon the relative sizes of the industry segments, adjusted to apparent industry concentration. For example, the pallet industry has few large firms, necessitating calls to industry associations to determine interest in using short hardwood lumber. The following were the interviews conducted by end-use segment:

TABLE 15

END-USER INTERVIEWS BY CATEGORY

INDUSTRY GROUP	NUMBER OF INTERVIEWS	% TOTAL HARDWOOD CONSUMPTION
Hardwood Handles and Turnings	4	5.8
Millwork and Flooring	23	24.0
Kitchen Cabinets	5	4.0
Wood Containers, Pallets and Skids	4	16.3
Household Furniture	15	30.6
Office Furniture	5	1.8
Office and Store Fixtures	2	4.7
Coffins and Caskets	3	1.7
Other	1	11.1
TOTAL	62	100.0

3.4.1 Objectives

The primary objective of the interview process was to establish the nature and extent of usage of short hardwood lumber.

The secondary objective was to establish factors influencing buyer behaviour, especially why the buyer did not use more short hardwood lumber.

3.4.2 Methodology

The number and specific firms to be contacted during the interview process was determined by a judgement sample technique. The relative importance of the end-user industry groups in terms of hardwood lumber consumption was estimated to determine industry priority (see Section 3.3). Next, apparent industry concentration was examined, and an attempt was made to contact the largest firms in each group. These firms were identified by industry and trade directory listings, and Statistics Canada references. The 62 interviews were conducted primarily in Ontario, with supplemental contacts made in Quebec.

LAMB, GUAY INC. attempted to interview the individual in each firm most knowledgeable about the company's hardwood lumber usage. The General Manager, or Purchasing Agent, therefore, was most often interviewed. A sample interview guide can be found in the Appendices.

A discussion of the observations made by the Consultants based on the end-user interviews follows. The reader should note that the interviews were often more of a qualitative rather than quantitative nature. Accordingly, the discussion of observations reflects this constraint.

3.4.3 Hardwood Handles and Turnings

A) Background

LAMB, GUAY INC. Consultants interviewed 4 firms which had between 3 and 225 employees. Sales ranged from $115,000 to $4.5 million annually. Total Canadian usage of hardwood lumber in this industry was 29.7 MM fbm in 1979 valued at $9.5 million [1]. This industry comprises those companies that manufacture tool handles, broom handles, mop handles, axe handles, dolls, turned legs for furniture and small specialties. Statistics Canada lists 37 such firms in Canada for 1979. The Consultants estimate that 30 of these firms are in Ontario and Quebec.

B) Findings

The Consultants found that firms in this industry buy their hardwood lumber RWRL. These companies are often associated with sawmills from where they buy their hardwood. There is considerable use of birch and beech.

The hardwood lumber these firms use is cut to size. For those companies making specialty products, this can involve a considerable number of units. In fact, while many industry categories preferred not to use short lumber because it increased handling, for some firms in this category, the use of long lumber increased handling costs. As a result, there are firms in this industry which would represent likely candidates for purchasing product from a short hardwood lumber mill. Other firms, however, displayed more indifference towards the concept of short hardwood lumber usage.

(1) Statistics Canada, Cat. No. 35 - 208.

C) Summary

Some firms in this industry could become substantial users of short hardwood lumber. However, a drawback is that many of these firms have already established close ties with supplier sawmills. Accordingly, new suppliers of short hardwood lumber may have to alter a well established relationship between buyer and seller. Unless the economic benefits were very clear, this could prove to be difficult.

3.4.4 Millwork Companies

A) Background

The 23 millwork companies contacted by LAMB, GUAY INC. Consultants varied in size from $1 million in annual sales to $32 million. The number of employees ranged from 22 to 750. Products manufactured by this industry includes: doors, door frames, sashes, custom furniture, butcher blocks, stairs, sliding doors, and custom cabinets. There are approximately 167 such firms in Ontario, and 250 in Quebec.

In 1979, the Canadian sash, door and other millwork industries used 475.5 MM fbm of softwood, and 123.2 MM fbm of hardwood (1). That is, nearly four times more softwood was used than was hardwood. Accordingly, it is not surprising that many of the companies contacted by LAMB, GUAY INC. consultants were exclusive users of softwood lumber. Much of the softwood lumber these companies used was imported ponderosa pine. The interviews with those companies using hardwood lumber is reported in the next section.

(1) Statistics Canada, Cat. No. 35 - 205.

B) Findings

Companies using hardwood lumber made products such as custom kitchen cabinets, custom furniture, custom millwork for specialized clients such as butcher blocks, etc. The majority of lumber in use appears to be hard maple, red oak (imported), and poplar. It is common for these operations to develop a strong relationship with a sawmill operator, and to buy exclusively or partially from the sawmill, with the balance from a wholesaler. The lumber is bought according to NHLA grades. Most millwork plants were not interested in the concept of short lumber usage, as most felt that they were currently adequately served. In addition, they were reluctant to buy dimension lumber as they have the machinery to produce their own. This machinery would have to be written off if not used, so millwork operators felt that, with few exceptions, they were happy with the current methods of operation of their industry. Only one company contacted would consider using dimension lumber in small volume where there is currently a high loss factor. This residue is presently used to heat the plant.

C) Summary

It is the opinion of LAMB, GUAY INC. that this category of hardwood end-users does not represent a viable market opportunity at the present time, but could be so in the future if a reliable supply of dimension lumber was available. This category is now apparently satisfied with current buying practices, and partially derives its income from dimension machining and, therefore, has little interest in this being done by outside suppliers.

3.4.5 Hardwood Flooring

A) Background

The firms interviewed varied in size, ranging in sales from $700,000 to $3.5 million annually. Firms had different markets with some exporting up to 80% of their hardwood flooring to Europe, while others sold all their product in the domestic market.

B) Findings

Companies interviewed did not operate their own sawmills. Lumber was generally bought rough-sawn, based on NHLA standards, random width and length from a variety of sources, but mostly from wholesalers. Some lumber was obtained from the Northeastern U.S., while the majority of the lumber for this industry appears to come from Ontario.

In attempting to establish satisfaction with the quality, quantity and nature of the purchasing process, LAMB, GUAY INC. Consultants could find no evidence of dissatisfaction by these manufacturers. Indeed, when asked whether the manufacturers would be interested in a modification of the grading rules to cater to their specific industry needs, the answer was a qualified "NO". Manufacturers feel that they are able to retain control of quality and be versatile by retaining their current methods of purchase. They do, however, feel that they would consider having hardwood lumber machined to their specifications if it could be done economically. It was noted by one manufacturer that, although he currently bought 10' to 16' lengths, he would be prepared to use shorter lumber if the increase in labour, handling and waste he anticipated, was more than offset by a lower lumber cost.

C) Summary

Industry participants were generally satisfied with their procurement. There appears to be little interest in using short lumber unless the short lumber was sold at a substantially lower price than the lumber the manufacturer currently purchases.

3.4.6 Kitchen Cabinet Manufacturers

A) Background

In 1979, 20.6 MM fbm of hardwood lumber was used in the manufacture of kitchen cabinets in Canada. The value of the hardwood lumber was $8.7 million [1]. There are about 115 such companies in Ontario, and 98 in Quebec.

The 5 companies interviewed by LAMB, GUAY INC. varied from a small, 3-person operation, to a 70-employee company with 1980 sales of $3.6 million. Finished products are sold mostly in Canada.

B) Findings

The kitchen cabinet industry buys much of its lumber dimensioned. This has saved the industry additional investment in plant and equipment. Participants indicated that by operating as an assembly as compared to a processing operation they produce finished products of satisfactory quality. Companies in this industry indicated that their suppliers provided them with dimension stock of suitable quality.

(1) Statistics Canada, Cat. No. 35 - 205.

One manufacturer, however, went out of the kitchen cabinet manufacturing business because he maintained that the price of lumber increased, while quality decreased. This company, however, conducted its own lumber processing. The manager contacted indicated that if a suitable supplier of dimension stock could have been located he would have been interested in converting his operation to one of assembly. He maintained that he experienced heavy loss factors with lumber he processed and that this, in addition to rising prices, eroded his gross margin and profitability.

C) Summary

LAMB, GUAY INC. Consultants note that the kitchen cabinet market is already using a significant amount of dimension lumber in their operation. Much of the lumber is obtained from secondary processors such as millwork operations.

3.4.7 Wood Container, Pallet and Skid Manufacturers

A) Background

There are 77 firms in Ontario, and 47 in Quebec, which fall into this industry category (1). Four firms were contacted, as well as the Canadian Pallet Council. Pallet makers produce pallets from 30" to 78" long, with the most common being 40" to 54" long. Pallets are produced from # 3 Common, the lowest quality lumber available, in virtually all of the hardwood species.

(1) Statistics Canada, Cat. No. 35 - 209.

Pallet manufacturers will buy lumber that cannot be used in any of the other end-user industries. The major concern is strength and price, and not appearance. Lumber containing knots or discolorations is perfectly acceptable as long as major splits are not present. Virtually any length of lumber over 3' can be used by the pallet manufacturers.

B) Findings

All pallet manufacturers contacted had some close association with one or more sawmills. One manufacturer owned a sawmill, and used all of the lower quality lumber from this operation to produce pallets. His own sawmill accounted for only 10% of his requirements, and he bought the rest from other sawmills in the area, again only of the lower quality. Another manufacturer was owned by a group of three sawmills, which supplied him with their lowest quality lumber. This provided them with a guaranteed captive market for their low quality lumber, which otherwise would have been a problem.

Pallet manufacturers, and related types of operations, purchase all lengths of lumber. There is a waste problem, but it is not a serious concern in the pallet industry as it is in other industries previously mentioned. Handling costs pose little problem to these operations because all lumber received must be cut into short pallet lengths.

C) Summary

Pallet manufacturers present an excellent marketing opportunity for short lumber. The manufacturer does not need long lengths, as the largest pallet produced is 78", with more popular size pallets being a maximum 54". These manufacturers

are concerned about waste, but not as much as in the previously discussed industry groups. If these manufacturers could be provided with standard sized lumber, this would relieve them of the waste problem, and provide a good market for short lumber.

The one major drawback of this sector is the low quality requirements. High quality lumber is not necessary, as appearance has no bearing on the saleability of the product. It would, therefore, be a waste to provide select grade shorts to be manufactured into pallets. However, this sector does provide a good market opportunity for lower quality short lumber.

3.4.8 Household Furniture Manufacturers

A) Background

The 15 household furniture manufacturers contacted varied in size from firms with annual sales values of $1 million, employing 80, to large firms with $81 million in annual sales and 1,700 employees. These companies produce a variety of upholstered and unupholstered furniture from hardwood lumber. The major species used are hard and soft maple, white oak, yellow and white birch, and poplar. Minor species used are ash, beech, cherry, and red oak. There are 308 such firms in Ontario, and 320 in Quebec (1).

(1) Statistics Canada, Cat. No. 35 - 211.

Most manufacturers bought RWRL lumber in # 2 Common or better grades. This definition includes a certain percentage, varying from 10% - 30% of short lumber. The manufacturers preferred longer lengths because of lower handling costs and smaller degree of waste. However, most stated that some of their requirements could be met by short lumber. This statement was qualified by the manufacturers who would require the shorts to be knot and defect-free to make the entire length usable.

For the most part, furniture manufacturers did not buy dimension stock. They preferred to buy RWRL, and cut it to size in-house. This provides them with increased flexibility and better quality control.

B) Findings

Several manufacturers owned sawmills that supplied up to 60% of their hardwood lumber requirements. The balance was supplied by other sawmills. The manufacturers used the Select and # 1 grade lumber themselves, and sold the balance through the sawmill. A small percentage, approximately 20% of this lumber was in the under 8 foot category.

Most manufacturers claimed that a large proportion of their hardwood lumber requirements could be met by short lumber, but unless market pressures forced them to switch, they prefer to remain with the longer lengths. The main reasons cited for this preference were the perceived increased handling costs and increased waste that would result from using short lumber.

C) Summary

As noted earlier, on page 35, Table 13, the household furniture industry group accounts for about 30.6% of hardwood lumber used, the largest single group. At the present time, these manufacturers buy RWRL lumber and cut it to desired lengths themselves. They are currently using some short lumber, either of high quality from their captive sawmills, or included in RWRL lumber they buy from outside sources.

There is an opportunity for increased use of short lumber in this industry group, but it would entail changes in current industry practice. In order to make it economical for manufacturers to use short lumber, it would have to be of higher quality (usable over its entire length) than the lumber currently purchased. Furthermore, the manufacturers would be forced to eliminate their in-house cutting operations to make the use of short lumber economical. In light of these requirements, it is the Consultants' opinion that other end-use markets such as pallet manufacturing have higher potential as short lumber markets.

3.4.9 Office Furniture Manufacturers

A) Background

The 5 office furniture manufacturers contacted varied in size from firms with annual sales volumes of $4 million with 31 employees, to larger firms with $43 million in sales with 850 employees. These companies produce a wide variety of wooden office furniture including desks, chairs, and tables as well as furniture produced from other materials such as steel. The major species used are hard and soft maple, white oak, and birch. There are 46 firms in Ontario, and 30 in Quebec (1).

(1) Statistics Canada, Cat. No. 35 - 212.

The majority of manufacturers bought RWRL lumber in # 2 Common, or better. A small percentage bought dimension lumber. Those manufacturers that bought RWRL lumber had similar comments to those of the household furniture manufacturers. They preferred longer lengths, but were able to use the shorter lumber (less than 8') received with the RWRL.

Manufacturers that did not have a large break-out facility preferred to buy dimension or pre-machined pieces. These manufacturers were in the minority, and were supplied by wholesalers and brokers.

B) Findings

The majority of office furniture manufacturers have much the same requirements as do the household furniture manufacturers. Short lumber is not economical, as it has a higher waste factor, and increased handling costs. The comments expressed in the household furniture section apply to this industry group as well.

The manufacturers who purchase dimension lumber are generally the smaller firms. They do not have the same cutting facilities as do the larger firms and, therefore, pay a premium price for their lumber. When ordering lumber, they specify specific lengths, of which approximately 30% is 8' or under. The majority of these firms bought their lumber through wholesalers.

A few of the manufacturers contacted bought pre-machined lumber. These manufacturers produced melamine overlayed desks with solid wood components such as legs. These components were purchased from millworkers, and the quality of work was found to be satisfactory by the manufacturers.

C) Summary

The same conclusions that were expressed for the household furniture manufacturers apply here. The majority of office furniture manufacturers buy RWRL lumber, and only use short lumber because it arrives mixed in with longer lengths.

Of the few manufacturers buying dimension lumber, or pre-finished pieces, the source of supply is already secured. These firms do not deal directly with sawmills, and it would be difficult to convince them to do so. The dimension stock is purchased from wholesalers who absorb the waste factor and charge a premium price. The pre-machined pieces come from the millworking sector whose lumber buying characteristics have been discussed in a previous section.

In the Consultants' opinion, the office furniture industry, while currently using a small proportion of short lumber, does not provide a good market opportunity for additional usage of shorts at present.

3.4.10 Office and Store Fixture Manufacturers

A) Background

This segment of the market consists of establishments engaged in producing primarily office and store fixtures. These products are produced according to designers drawings, and vary with each particular order. This serves to differentiate this industry group from those previously discussed. The household furniture manufacturer, for example, has a set product line and can, with reasonable accuracy, forecast his hardwood lumber requirements. The fixture manufacturer, in contrast, cannot

forecast these requirements, as virtually all of his orders are for custom products. Statistics Canada lists 173 such firms in Ontario, and 114 in Quebec [1].

The fixture manufacturer has to remain flexible in order to satisfy his customers. This industry uses not only a variety of lengths, but also a large selection of wood species. Therefore, it is very difficult for these manufacturers to provide estimates as to how much short lumber they can use annually.

B) Findings

All of the fixture manufacturers contacted stated that they purchased their lumber for each specific order they received. Each of their clients specify a certain type of wood and the dimensions of the finished product. Therefore, the manufacturer buys lumber to fill these requirements. A certain percentage of the annual lumber purchased by fixture manufacturers falls within the short lumber classification. However, due to the custom nature of the industry, respondents were unable to provide accurate estimates. Furthermore, the wood species used are not all native to Ontario, which again makes it difficult to estimate the proportion of this industry's lumber requirements that might be supplied by Eastern Ontario short lumber.

(1) Statistics Canada, Cat. No. 35 - 213.

C) Summary

Due to the custom order nature of the fixture industry, it is the Consultants' opinion that the office and store fixture segment does not provide a good opportunity for short lumber. Manufacturers are concerned with matching their clients specifications and, therefore, buy small volumes of lumber to meet the requirements of each order. They purchase lumber from wholesalers who carry a wide variety of wood species in different lengths. The wholesalers can, therefore, fill most of the manufacturers' requirements quickly. A short log sawmill operating in Eastern Ontario would not have the range of species and the lengths necessary to fill the fixture manufacturers' needs.

3.4.11 Coffin and Casket Manufacturers

A) Background

In 1979, the Canadian coffin and casket industry consumed 8.8 MM fbm of hardwood lumber. The value of this hardwood lumber consumption in Canada was $5 million. Seventy-eight thousand hardwood coffins were made in 1979, while cloth covered coffins represent a small percentage of this market. There are 7 firms in Ontario and 12 in Quebec (1).

B) Findings

Coffin and casket manufacturers buy their hardwood RWRL kiln dried. This lumber is bought from wholesalers. Larger manufacturers usually do their own milling. In this way, they are able to retain control of quality, which they perceive would be reduced if they gave this up. One casket manufacturer, who

(1) Statistics Canada, Cat. No. 35 - 210.

sells his caskets nationally, and uses 1 MM fbm of hardwood lumber per year, indicated that he is not interested in purchasing hardwood lumber in lengths less than 8' long. He indicated that he was satisfied with his current method of purchase. He said he had noted both a decline in wood quality and price increase in hardwood recently, both of which were putting pressure on his operation.

C) Summary

Coffin and casket manufacturers represent a relatively small percentage of total hardwood lumber usage. In addition, there appears to be little interest in modification of current purchasing habits. Accordingly, LAMB, GUAY INC. suggests that efforts be directed elsewhere in order to increase short lumber utilization.

3.5 Distribution of Hardwood Lumber

While conducting interviews with Eastern Ontario sawmill operators LAMB, GUAY INC. established that wholesalers and brokers are extremely important in bringing sawmill products to market. Table 16 will confirm this finding.

TABLE 16

IMPORTANCE OF WHOLESALERS/BROKERS TO EASTERN ONTARIO SAWMILLS

SAWMILL CLASSIFICATION	NO. OF MILLS	NUMBER OF SAWMILLS SELLING TO:		
		WHOLESALER	BROKER	TOTAL
B	5	45%	-	45%
C	9	47%	7%	54%
D	6	34%	22%	56%
E	8	67%	11%	78%
F	74	37%	2%	39%

SOURCE: LAMB, GUAY INC. Interviews

LITERATURE CITED

1. Aird, K.L., Ottens, J., "The Outlook for Timber Utilization in Canada to the Year 2000", Forestry Technical Report 29, Canadian Forestry Service Policy Development and Analysis Branch, Ottawa, Ontario, July 1979.

2. Bryan, Richard W., "Pine Dimension Mill Has First Gang Saw of Its Type in America", Forest Industries, February 1977.

3. Flann, I., "Sawing for Profit", Canadian Pulp and Paper Industry, MacLean-Hunter, October 1981.

4. Hall, W. W., "Renfrew County Forest Industries - A Wood Products Complex", Opeongo Forestry Service, Renfrew, Ontario, June 1972.

5. National Forest Products Association, Finger Tip Facts and Figures, Washington, D.C., October 1981.

6. Ontario Ministry of Natural Resources, Timber Sales Branch, "The Forest Industry in the Economy of Ontario", 1981.

The dependence upon wholesalers and brokers increases with decreasing sawmill size, except for the very small sawmills. These smaller sawmills sell their lumber through other channels, and do much custom sawing.

Given the importance, then, of wholesalers and brokers in the marketing process, LAMB, GUAY INC. Consultants conducted interviews with wholesalers and brokers. The objective of these interviews was to establish wholesaler and broker opinion as to end-user receptiveness to short hardwood lumber. LAMB, GUAY INC. interviewed a total of 49 firms involved in the distribution of hardwood lumber in Ontario, Quebec, and the Northeastern United States.

LAMB, GUAY INC. Consultants found distributors were of the opinion that the market for short lumber is currently a small one, and likely to stay that way, unless pricing and/or availability becomes a major factor.

The following verbatim comments made by distributors to the Consultants will serve to illustrate the point:

- "There is not much of a market for short lumber".
- "Short lumber can satisfy 15% of the current market".
- "The market for short lumber is poor".
- "Short lumber may be sold only on price".

The aspect of education was mentioned several times by distributors in relation to an expanded market for short lumber. Specifically, distributors noted that aspects of short lumber usage and application could be drawn to the attention of the customers. Some verbatim comments that apply are:

- "Using short lumber can improve costings and productivity because waste can be pre-determined".

- "There is a market for short lumber, but the buyer needs educating".

LAMB, GUAY INC., based on previous experience, notes that end-user education is often expensive, and there remains a sizeable risk that, even after education is attempted, the end-user will still not perceive that there is a need for change. The Consultants note that an end-user need cannot be created. In order for there to be acceptance of the use of short hardwood lumber, end-users must perceive that such usage will be to their advantage. Distributors are generally of the opinion that this is not currently the case.

3.6 Market Potential for Short Hardwood Lumber

3.6.1 Outlook for Hardwood Lumber

In order to estimate the market potential for short hardwood lumber, it is necessary to establish the overall outlook for hardwood lumber production, imports and exports.

The demand for Canadian hardwood lumber in the coming years will be the result of a complex set of macro and micro-economic trends. Demand for hardwood lumber will depend on the activity of the end-use industries requiring the material, availability of preferred species, to name just a few factors.

A detailed economic forecast of the demand for Canadian hardwood lumber is beyond the scope of this study. Therefore, LAMB, GUAY INC. reviewed available relevant literature, and selected a reference which, in the Consultants' opinion, represents a realistic view of the outlook for hardwood lumber to the year 2000.

This reference, "The Outlook for Timber Utilization in Canada to the Year 2000", by K.L. Aird and J. Ottens [1], examines the whole of the Canadian forest products industry and included hardwood lumber as one of the sub-sectors.

Economic modelling was employed to generate forecasts of output for each forest industry sub-sector. These models are based on a set of assumptions about the likely macro-economic climate of Canada in the future. Forecasts of industrial activity in forest product consuming industries in Canada and the United States were obtained from two large macro-econometric models of the Canadian and United States economies, the CANDIDE model (Economic Council of Canada, 1976), and the Wharton Annual and Industry Forecasting Model (Preston, 1972).

For offshore markets, indicators of industrial growth at rates assumed in the selected scenario were used. Within the detailed final consumption sectors of these models, consumer expenditures on the final products of forest product industries are explained and forecast within a set of mutually consistent assumptions.

(1) Aird, K.L., Ottens, J., "The Outlook for Timber Utilization to the Year 2000", Forest Industry Technical Report 29, Canadian Forestry Service, Ottawa, July, 1979. (Undistributed)

In the industry output sectors, industry output levels that are required to produce the final products that consumers are expected to purchase, were calculated. Finally, to produce these output levels, forest products are used. An econometric model was developed to estimate and forecast the volumes of forest products used by these industries at rates implied by anticipated future costs of substitute materials, and overall manufacturing costs.

A scenario consisting of certain macro-economic conditions in Canada was assumed to the year 2000. These assumptions included forecasts of population growth, energy costs, government policy, and foreign trade. LAMB, GUAY INC. notes that some of the specific assumptions are somewhat outdated (energy costs, exchange rates), but the overall scenario remains generally valid. This scenario anticipates a general slackening in Canadian economic growth from the current period through the year 2000, compared with growth rates experienced in the 1960's and 1970's. Readers are directed to the reference for a more detailed understanding of the assumptions and methods utilized by Aird and Ottens.

Aird and Ottens forecast that for the period between 1980 and 2000, domestic consumption of hardwood lumber is expected to increase by 4.2% per year. This increase in consumption will be due mainly to strength in the household furniture and other secondary manufacturing industry. Hardwood lumber usage is expected to decline in the flooring industry. Imports are expected to increase, resulting in expected net additional Canadian production of a modest 2.7% per year from 1980 to 2000, as shown in Table 17.

TABLE 17

DOMESTIC PRODUCTION, APPARENT CONSUMPTION, EXPORTS AND IMPORTS OF HARDWOOD LUMBER TO 2000

(MM fbm)

PERIOD OR ANNUAL AVERAGE	PRODUCTION	APPARENT CONSUMPTION	EXPORTS	IMPORTS
1951-55	470	407	121	58
1956-60	425	413	105	93
1961-65	474	446	128	101
1966-70	556	503	161	107
1971-75	533	550	125	143
1980	590	571	125	106
1985	649	606	131	88
1990	800	871	139	209
1995	942	1,131	145	334
2000	1,031	1,294	153	410

SOURCE: The Outlook for Timber Utilization to the Year 2000.

3.6.2 Current Market Penetration of Short Hardwood Lumber

As previously discussed, most purchasers currently buy their hardwood lumber RWRL. Under NHLA grading rules, this means buyers are to receive no shorts (lumber under 8' in length). However, LAMB, GUAY INC.'s industry experience, and the study interviews, suggest that industry practice departs somewhat from the grading standards. Purchasers, in fact, accept some quantities of hardwood lumber under 8' lengths when making their RWRL purchases. When hardwood lumber is bought in this manner, the objective is usually to have as little short hardwood lumber as possible in the mix. That is, the short hardwood lumber is not bought on its own merits, but rather because it is part of the overall purchase package. LAMB, GUAY INC. estimates that short hardwood lumber purchased in this manner accounts for perhaps 10% of the total current hardwood consumption. Therefore, in the regional markets discussed in the report (Ontario, Quebec, exports to the U.S.), short hardwood lumber consumption might have been in the order of 32 MM fbm in 1979. (10% of total shipments of 319.9 MM fbm).

3.6.3 Potential Market Penetration of Short Hardwood Lumber

The objective of this section is to access how much potential additional short hardwood lumber would be consumed if those customers that really wanted to purchase short hardwood lumber exclusively were able to do so. That is, by making short hardwood lumber available to purchasers, what would the additional, or incremental market penetration, be?

In order to assess the extent of potential industry interest in short hardwood lumber, the following factors were considered:

- Commitment of capital invested in equipment which would become obsolete by virtue of the change in purchasing procedures.

- Potential for reduction in labor to cut long lumber to length.

- Current products produced, and the amount of short lumber used, and,

- Possible negative perceptions about "short lumber" as "inferior lumber".

The Consultants of LAMB, GUAY INC. have built the model described in Table 18 to show industry structure and potential conversion to short lumber. To arrive at an approximation of the incremental market potential for short hardwood lumber, the Consultants considered each end-use industry separately. The Consultants made an estimate of incremental penetration in each industry, based on the input received during the end-user interview process. Each individual penetration estimate was "weighted" by the importance of the end-user industry to total hardwood consumption. In this manner, a total incremental penetration estimate was arrived at.

The reader should understand that this procedure was used to arrive at an "order of magnitude" estimate of the incremental market potential for short hardwood lumber. It is difficult to be more precise with the information currently available.

TABLE 18

INCREMENTAL SHORT HARDWOOD LUMBER MARKET POTENTIAL

	CURRENT % OF TOTAL MARKET	POTENTIAL EXTENT OF INCREMENTAL INDUSTRY CONVERSION TO SHORT HARDWOOD LUMBER * %	% WEIGHTED AVERAGE USAGE
Hardwood Handles and Turnings	5.8	15%	.87
Millwork and Flooring	24.0	15%	3.60
Kitchen Cabinets	4.0	15%	.60
Wood Containers, Pallets, Skids	16.3	35%	5.71
Household Furniture	30.6	15%	4.59
Office Furniture	1.8	15%	.27
Office and Store Fixtures	4.7	15%	.71
Coffins and Caskets	1.7	-	-
Other	11.1	5%	.51
TOTAL	100%		17%

* LAMB, GUAY INC. Estimates, fbm Basis.

LAMB, GUAY INC. estimates that an incremental 17% of the total market could undergo conversion to short hardwood lumber in the long term if all species were sold at market price, and of suitable quality.

As defined in Section 3.2, the total shipments for Ontario and Quebec sawmills, inclusive of exports from Ontario and Quebec to the U.S., were 319.9 MM fbm in 1979. Assuming market penetration of 17% of these shipments, short hardwood lumber could, perhaps, enjoy a market potential of, say, 54 MM fbm.

Table 19 below summarizes the calculations made by the Consultants to arrive at the estimated incremental market potential for short hardwood lumber, using 1979 as a base year.

TABLE 19

ESTIMATED INCREMENTAL MARKET POTENTIAL FOR SHORT HARDWOOD LUMBER - 1979

(MM fbm)

	ONTARIO	QUEBEC	TO U.S.	TOTAL
(a) Canadian Hardwood Lumber Shipments	129.7	131.0	59.1	319.9
(b) Estimated Current Short Hardwood Lumber Penetration 10% (a X b)				31.9
(c) Estimated Incremental Short Hardwood Lumber Penetration 17% (a X c)	22.0	22.3	10.1	54.4

SOURCE: LAMB, GUAY INC. Estimates

This incremental market potential must be viewed by sawmillers with some caution, however, because of the following factors:

1. 1979 has been used as a base year, but total demand for hardwood lumber is subject to rather large variations up to 30% on a year-to-year basis.

2. End-user conversion to short hardwood lumber will require substantial marketing effort and education. End-user interviews indicate indifference to purchasing increased quantities of short hardwood lumber. The Consultants view the 17% incremental penetration as a maximum figure.

3. Eastern Ontario producers have traditionally produced about 16% [1] of the total hardwood lumber consumed in Canada. It is unlikely that if short hardwood lumber becomes more accepted at the end-user level in the future, that Eastern Ontario sawmillers would capture the entire market potential. Producers in other regions would likely also participate.

3.7 Summary

This Section has described geographical markets and end-user industries for hardwood lumber. The regions considered are Ontario, Quebec, and exports from these provinces to the U.S., Ontario, and Quebec, have been shown to have nearly equal shipments of hardwood lumber (232 MM fbm for each province).

Nine end-user industries were identified, the largest user of hardwood lumber being the household furniture industry (31% of the total, fbm basis).

Next, buying attitudes were considered. It was explained that buyers, in general, appeared to the Consultants of LAMB, GUAY INC. to be largely indifferent to using increased amounts of short hardwood lumber. It was noted that there would have to be an easily perceivable benefit for these buyers to use more short hardwood lumber.

Distributors were next examined. The companies contacted appeared to support the conclusion that end-users were largely indifferent to using short hardwood lumber. They felt that considerable end-use education would be required.

(1) Ontario Forest Industry Statistical Reports, Ontario Ministry of Natural Resources, and prior calculations.

Finally, the potential end-user industry conversion, and market potential for short hardwood lumber was established. Possible incremental end-use conversion to short hardwood lumber was set at 17% of the current hardwood lumber used. This would translate into a total market potential for short hardwood lumber of about 54 MM fbm. However, the Consultants view this as a maximum figure that could only be achieved after some years of considerable marketing effort by producers to selected end-users.

The highest potential end-user industries for increased usage of short hardwood lumber were identified as: wood containers/ pallets/skids, household furniture and millwork/flooring.

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4.0 EASTERN ONTARIO HARDWOOD SAWMILLS

This section of the study report presents the findings of the Consultants' extensive interviews with hardwood sawmillers in Eastern Ontario. This part of the study was aimed at identifying relevant hardwood sawmill operations in the region, establishing the scope of their activities, and determining their strengths and weaknesses.

4.1 Interview Methodology

The Consultants attempted to contact all the known hardwood sawmills in the Eastern Ontario region. One hundred and fifty-five sawmills were identified through listings in "Primary Wood-using Industries in Ontario - 1979", published by the Ontario Ministry of Natural Resources.

The 155 sawmills were then classified by annual production. The 42 largest sawmills were identified for personal interviews. The remaining 113 were identified for contact by telephone. In total, 42 hardwood sawmillers were personally interviewed by the Consultants, with an additional 60 telephone contacts completed. One hundred and two sawmillers were interviewed. Those not interviewed had either gone out of business or did not respond to repeated attempts to contact them. The Consultants did not discover any additional sawmills to add to the interview list.

Also, LAMB, GUAY INC. Consultants personally visited 26 sawmill operators in the Northeastern United States in order to compare their operations to Eastern Ontario operations.

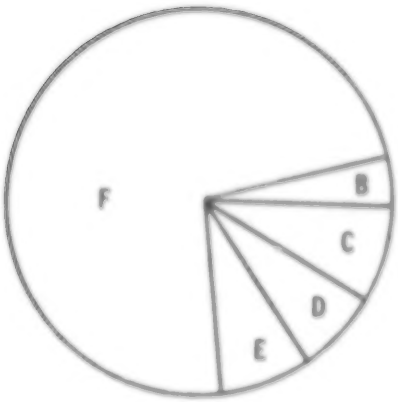
4.2 Sawmills by Size Classification

The Consultants analyzed the data obtained through the interview process to establish the number of mills in each size class.

The Eastern Ontario hardwood sawmill industry is comprised mostly of sawmills producing less than 2 MM fbm per year. These sawmills represented 79% of the sawmills contacted, as shown in Table 20.

TABLE 20

EASTERN ONTARIO HARDWOOD SAWMILL INDUSTRY STRUCTURE



MILL CLASS	MILL CLASS SIZES (MM fbm)	NO. OF MILLS INTERVIEWED	% MILLS IN CLASS
A	> 25	-	-
B	10 - 24.9	5	5%
C	5 - 9.9	9	10%
D	2 - 4.9	6	6%
E	1 - 1.9	8	8%
F	< 1	74	71%
		102	100%

SOURCE: LAMB, GUAY INC. Interviews

4.3 Age of Sawmills

The great majority of Eastern Ontario sawmills are over ten years old, with all the important "B" size mills in that category.

The Consultants were able to also determine that all of "B" mills had undergone some expansion activity, since they were first constructed. However, this was not generally true of the smaller mills. The Consultants believe this is because many of the small mills operate only seasonally, or lack the capital to contemplate expansion. Table 21 shows these facts in more detail.

TABLE 21

AGE OF EASTERN ONTARIO HARDWOOD SAWMILL OPERATION BY SIZE CLASS

NO. OF MILLS INTERVIEWED	MILL CLASS	OVER 10 YEARS	UNDER 10 YEARS	EXPANSION SINCE CONSTRUCTION
5	B	100%	-	100%
9	C	60%	40%	30%
6	D	83%	17%	33%
8	E	75%	25%	25%
74	F	75%	25%	7%
102		76%	24%	24%

SOURCE: LAMB, GUAY INC. Interviews.

4.4 Sawmill Employment

Sawmills of classification E and F, which represented 79% of the total number of sawmills, only represented 23% of total estimated hardwood mill employment in Eastern Ontario, as shown in Table 22. The "B" mills accounted for 42% of the employment in mills contacted.

TABLE 22

EMPLOYMENT IN EASTERN ONTARIO HARDWOOD SAWMILLS

INTERVIEWED	MILL CLASS	AVERAGE NUMBER OF EMPLOYEES	NUMBER OF MILLS	TOTAL EMPLOYEES	% OF EMPLOYMENT
-	A	-			
5	B	110	5	550	42%
9	C	37	9	333	25%
6	D	22	6	132	10%
8	E	10	8	80	6%
74	F	3	73	219	17%

SOURCE: LAMB, GUAY INC. Interviews

Table 22 indicated that the estimated total direct employment in the 102 mills contacted is about 1,300 jobs. At least an equivalent number of jobs are dependent on harvesting the resource. The Ontario Ministry of Natural Resources also estimates that for every direct employee in a forest product industry, another indirect job is created in a related industry [1]. Therefore, the total hardwood sawmill industry employment impact on the study region is approximately 3,900 - 4,300 jobs.

Statistics Canada [2] labor force data indicates total employment in the defined region in 1976 as 258,130. The hardwood sawmills contribute to about 2% of total employment in Eastern Ontario.

These figures should be considered in the context, however, of the Consultants' observations that many of the hardwood sawmills visited were significant to the economies of many of the very small communities in Eastern Ontario, such as Palmers Rapids, Gilmour, and Roslin.

(1) "The Forest Industry in the Economy of Ontario", Timber Sales Branch, Ontario Ministry of Natural Resources, 1981.

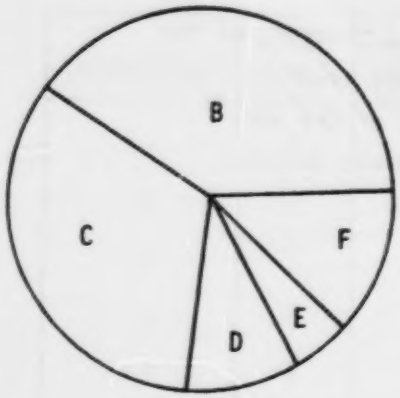
(2) Statistics Canada, Cat. No. 94 - 801. Figure cited does not include 242,590 employed persons in the Ottawa/Carleton area in 1976.

4.5 Production

LAMB, GUAY INC. established that the 5 "B" mills and 9 "C" mills together, accounted for 78% (~ 33 MM fbm) of the hardwood lumber output of the 102 Eastern Ontario sawmills interviewed, as shown in Table 23.

TABLE 23

PRODUCTION FROM EASTERN ONTARIO HARDWOOD SAWMILLS



NO. OF MILLS INTERVIEWED	MILL CLASS	% OF TOTAL PRODUCTION
-	A	-
5	B	38%
9	C	40%
6	D	10%
8	E	5%
74	F	7%
102		100%

SOURCE: LAMB, GUAY INC. Interviews.

Larger mills and smaller mills both process the majority of their lumber as dimension stock, while mills of intermediate size tend to produce more pallet stock, on a percentage basis, than do larger and smaller mills. See Table 24.

TABLE 24

OUTPUT OF EASTERN ONTARIO HARDWOOD SAWMILLS - BY PRODUCT TYPE

NO. OF MILLS INTERVIEWED	MILL CLASS	TOTAL %	--AVERAGE PERCENTAGE OF LUMBER USED FOR:----			
			DIMENSION STOCK	RAILWAY TIES	PALLET STOCK	OTHER
-	A	-				
5	B	100	65	10	14	11
9	C	100	55	9	17	19
6	D	100	48	8	35	9
8	E	100	38	42	20	-
74	F	100	75	14	7	4

SOURCE: LAMB, GUAY INC. Interviews

The industry structure in Eastern Ontario is changing, as the larger mills continue to increase their production at the expense of the mills of intermediate size. The smallest mills are also increasing production, but on a small base.

TABLE 25

PRODUCTION BY YEAR FOR EASTERN ONTARIO HARDWOOD SAWMILLS

NO. OF MILLS INTERVIEWED	MILL CLASS	AVERAGE PRODUCTION (MM fbm)			ANNUAL % CHANGE 1979 - 1981 *
		1979	1980	1981 *	
5	B	8.1	8.2	8.6	+2.2%
9	C	6.0	4.7	4.7	-7.8%
6	D	1.9	1.8	1.9	-3.3%
8	E	0.6	0.7	0.6	±0.0%
74	F	0.09	0.09	0.1	+4.6%

* Projected.

SOURCE: LAMB, GUAY INC. Interviews.

In total, the hardwood sawmills of Eastern Ontario produced 106.7 MM fbm of hardwood in 1980. Of this, 48% was maple, as shown in Table 26.

TABLE 26

1980 HARDWOOD SAWMILL PRODUCTION BY SPECIES OF EASTERN ONTARIO

SPECIES	% OF TOTAL
Birch	8%
Elm	3%
Oak	3%
Maple	48%
Poplar	11%
Other (1)	18%
Unclassified (2)	9%
TOTAL	100%

SOURCE: Lamb, Guay Inc. Interviews

(1) The "Other" classification includes several identifiable minor hardwood species such as Beech and Cherry.

(2) The "Unclassified" classification includes all unidentified species cut.

Table 27 shows that the 60% of hardwood lumber produced by Eastern Ontario sawmills interviewed is purchased by manufacturers. In turn, the majority of this volume is produced by larger sawmills (Classification B and C - 78%).

TABLE 27

PRODUCTION AND DIRECTION OF SALES BY END-USER CATEGORY

NO. OF MILLS INTERVIEWED	MILL CLASS	PERCENT OF PRODUCTION USED BY/FOR						
		DIRECT TO CONSUMER	OWN USE	CUSTOM SAWING	MANUFACTURER	RETAILER	CONTRACTOR	OTHER(1)
5	B	64%	-	-	46%	38%	40%	50%
9	C	4%	57%	27%	36%	32%	40%	50%
6	D	8%	-	13%	9%	10%	20%	-
8	E	4%	-	7%	4%	10%	-	-
74	F	20%	43%	53%	5%	10%	-	-
% OF TOTAL PRODUCTION		13%	4%	8%	60%	11%	3%	1%

SOURCE: LAMB, GUAY INC. Interviews

(1) The "Other" classification includes all unspecified sales.

All sawmills interviewed in the region rely heavily on wholesalers to sell their production. Only the larger sawmills provide a significant amount of lumber direct to the manufacturer, as can be seen in Table 28.

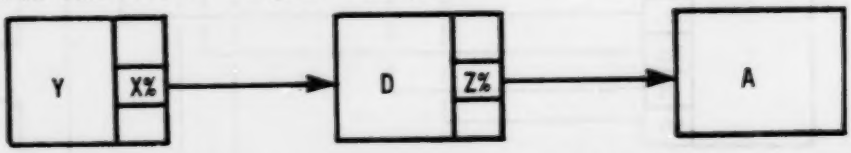
TABLE 28

CUSTOMERS OF EASTERN ONTARIO HARDWOOD SAWMILLS

NO. OF MILLS INTERVIEWED	SAWMILL CLASS	TOTAL	----------% OF SAWMILL PRODUCTION SELLING TO:----------					
			CONSUMER	OWN USE	CUSTOM SAWING	BROKER	WHOLESALER	MANUFACTURER
5	B	100%	19%	-	-	-	45%	36%
9	C	100%	-	7%	7%	7%	47%	32%
6	D	100%	11%	-	11%	11%	34%	32%
8	E	100%	11%	-	11%	11%	67%	-
74	F	100%	17%	12%	32%	2%	37%	-

SOURCE: LAMB, GUAY INC. Interviews.

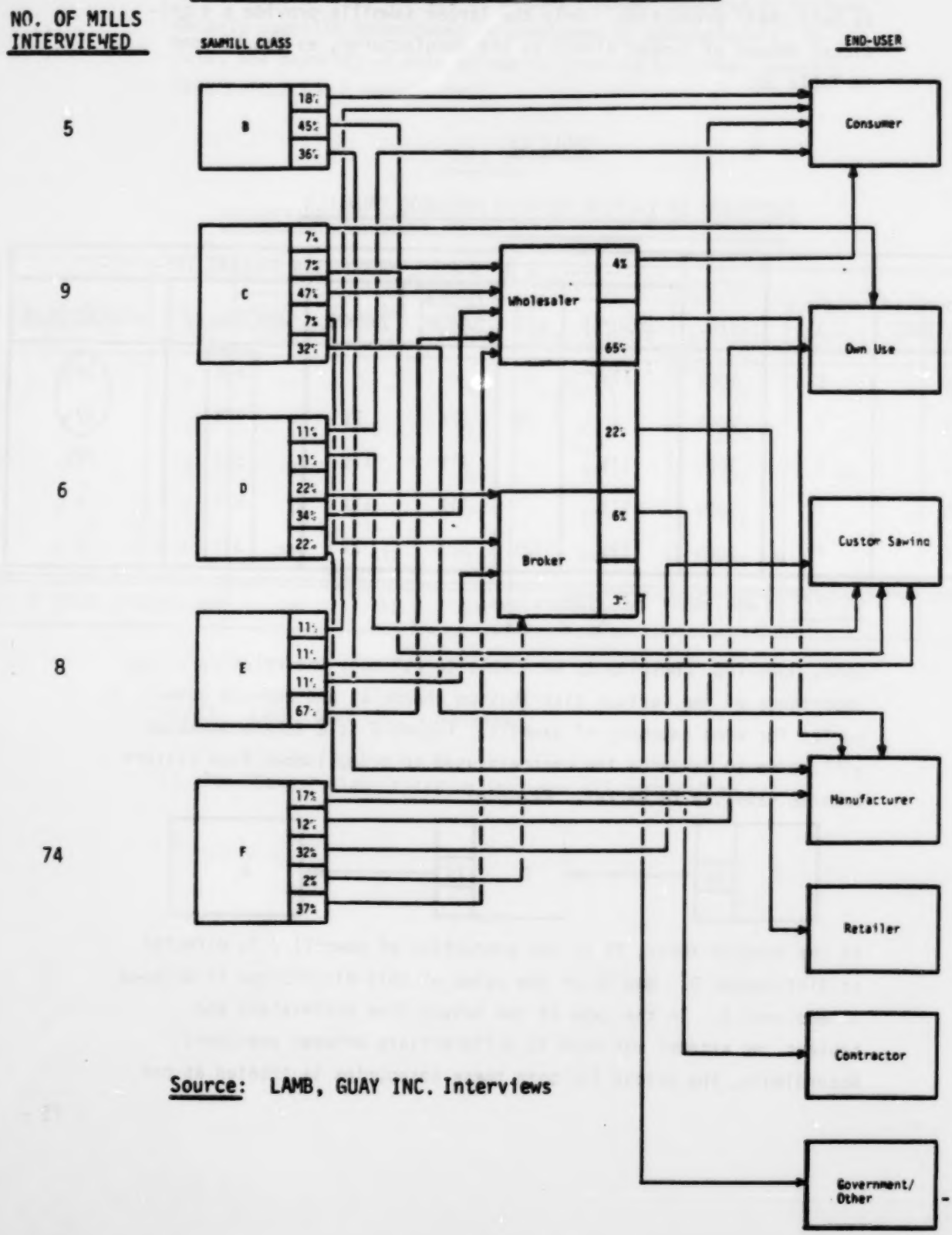
LAMB, GUAY INC. Consultants were able to estimate the relative volume importance of the various distribution channels, and end-use categories for each category of sawmill. Figure 8 is a schematic which will serve to describe the channels used to bring lumber from Eastern Ontario sawmills to market. Example:



In the example above, X% of the production of sawmill Y is directed to distributor D. Now Z% of the sales of this distributor is shipped to end-user A. In the case of the output from wholesalers and brokers, no attempt was made to differentiate between end-users. Accordingly, the output for both these categories is treated as one.

FIGURE 8

SCHEMATIC OF DISTRIBUTION CHANNELS FOR HARDWOOD FROM EASTERN ONTARIO HARDWOOD SAWMILLS



Source: LAMB, GUAY INC. Interviews

4.6 Main Source of Timber

Table 29 indicates the sources of timber by sawmill class for the sawmills interviewed:

TABLE 29

SOURCE OF TIMBER

NO. OF MILLS INTERVIEWED	CLASS	CROWN LIMITS	FREEHOLD	PURCHASED
5	B	50%	12%	38%
9	C	42%	8%	50%
6	D	43%	14%	43%
8	E	13%	-	87%
74	F	7%	-	93%
102		41%	8%	51%

SOURCE: LAMB, GUAY INC. Interviews.

4.7 Equipment

Only larger sawmills have a significant percentage of kiln usage, and even then, it is only 20% of total B size mills. Smaller mills have fewer kiln facilities, as shown in Table 30.

TABLE 30

EASTERN ONTARIO HARDWOOD SAWMILLS WITH KILN DRYING FACILITIES, BY CLASS

NO. OF MILLS INTERVIEWED	MILL CLASS	KILN	NO FACILITIES
5	B	1	4
9	C	1	8
6	D	1	5
8	E	-	8
74	F	1	73
102		4	98

SOURCE: LAMB, GUAY INC. Interviews

More of the larger size sawmills ("B" and "C") interviewed had chippers than any other size, yet intermediate size sawmills included more mills with both chippers and planers than any other mill class. Smaller mills had neither chippers nor planers (see Table 31).

TABLE 31

EASTERN ONTARIO HARDWOOD SAWMILLS WITH CHIPPING AND PLANING FACILITIES

NO. OF MILLS INTERVIEWED	MILL CLASS	EQUIPMENT			
		CHIPPER	PLANER	BOTH	NEITHER
5	B	4	-	1	-
9	C	6	-	3	-
8	D	2	-	6	-
6	E	1	2	-	3
74	F	2	3	1	68
102		15	5	11	71

SOURCE: LAMB, GUAY INC. Interviews

Considering both Table 30 and Table 31, it appears that, while "B" mills with both chippers and planers do their own kiln drying, intermediate size mills with both chippers and planers do not necessarily do their own kiln drying. This kiln drying would be done by the end-user or distributor.

4.8 Residue Disposal

Table 32 indicates that larger mills interviewed usually have more effective means of residue disposal, therefore, little waste results.

TABLE 32

RESIDUE DISPOSAL

NO. OF MILLS INTERVIEWED	CLASS	SLABS (%)				CHIPS (%)			SAWDUST (%)			SHAVINGS (%)			BARK (%)		
		Chipped	Sell	Burn	Bulldoze	Sell	Burn	Bulldoze	Sell	Burn	Bulldoze	Sell	Burn	Bulldoze	Sell	Burn	Bulldoze
5	B	4	1	-	-	5	-	-	5	-	-	5	-	-	1	1	3
9	C	7	2	-	-	9	-	-	6	-	3	9	-	-	1		8
6	D	-	4	2	-	6	-	-	3	-	3	6	-	-	-	-	6
8	E	-	4	1	3	8	-	-	3	-	3	4	-	4	-	-	8
74	F	-	46	14	14	50	-	24	31		43	74	-	-	7	-	67
		11	57	17	17	78		24	48		52	98		4	9	1	92

SOURCE: LAMB, GUAY INC. Interviews

4.9 Attitudes of Sawmill Operators

During the course of the interviews with operators of sawmills in Eastern Ontario, it became apparent that most operators of larger sawmills are both aware of the short log concept, and willing to take action to make profitable use of shorter logs. A few sawmills currently utilize short logs. However, two general concerns emerged:

1. That the processing of short logs could prove costly because of the additional labor costs, and

2. That the lumber, once processed, could still face potential marketing problems, and lack of purchaser acceptance.

In particular, there was a concern that short log processing may not provide a sufficient return to justify the capital invested because of the grade/price penalty that short lumber (under 8') faces under current NHLA grading rules.

NHLA grading rules require that the highest value grades should contain, not only high quality lumber, but permit only a small percentage of short lumber. This grading system applies regardless of customer or the end-use of the lumber. As a result, manufacturers who need short lumber for their production buy high grade lumber, and cut it to length, or buy lower grade lumber, and sort this for the higher quality shorts.

4.10 Field Visits to the U.S.

In order that the industry of Eastern Ontario could benefit from the experience of the U.S. hardwood lumber industry, LAMB, GUAY INC. visited sawmill operators, distributors, and end-users in Massachusetts, Connecticut, Maine, Michigan, New Hampshire, New York, Ohio, and Pennsylvania. Twenty-six operations were visited.

New England Field Trips

In New England, where high-grading of the growing stock has occurred, there is a strong presence of a woodworking industry. Much industry in this area is vertically integrated and produces a wide variety of finished goods from short lumber. Producers of short log equipment for short lumber manufacture are also located in New England.

Ash, with its open grain and resemblance to oak, is in strong demand for furniture stock. Other species used are yellow and white birch, oak, rock maple, hard maple, and beech. Typical prices paid by sawmills for logs delivered to mill are as follows:

TABLE 33

OBSERVED PRICES IN NEW ENGLAND
(FALL 1981)

Species	Grade	Price (M fbm)
Ash	All	U.S. $230 - $300, Avg $265
Yellow Birch	1	U.S. $220 - $250, Avg $230
Yellow Birch	2	U.S. $160 - $180
Oak	All	U.S. $230
Maple	1	U.S. $180 - $195
Maple	2	U.S. $150 - $160
Beech	All	U.S. $110

SOURCE: LAMB, GUAY INC. Interviews.

Frequently, no attempt was made to market short-ends. For one mill in New England, this reduced utilization to between 35% and 40%. Short-ends and slabs were commonly chipped, and the chips sold to pulp and paper companies, with sawdust being used for hog fuel. A typical price (f.o.b. mill) for short-ends and slabs was $18.50 per green ton, with sawdust averaging $7.00 per oven dry ton.

Prior to debarking, one sawmill cut logs in 32", 42", or 48" lengths. A Penney bolter, 2 straight line ripsaws, and two cut-off saws were used to saw the bolts to the required dimensions. Major products from this operation include 1" and 2" squares, 6" and 8" chair blanks, 4' road pickets, and crutch stock. Pieces trimmed from squared end boards were stockpiled and sold for specialty items such as candle holders. Yellow birch, white birch, or maple was converted into crutch stock, a high value product. This company also burns floor sweepings and other unmerchantable trimmings in several large wood stoves located throughout the building.

Another company in New England produced dowels, rods, and glue pins from white birch. This company used to operate a Penney bolter, but this has now been replaced with a multiple gang saw. Flitches were dried in either a drying shed or kiln. All slabs were used for electricity generation, drying, and heating.

Another company produced dowels and turnings using white birch pulpwood, birch, and hard maple. Mill residue was either processed into a variety of products like litter or wood flour or used as hog fuel for heating.

Another company in New England bought logs in random lengths, and sawed them into four foot bolts with an electric power saw. A Penney bolter then cut flitches which were kiln dried. Close tolerance turnings were made. This type of operation represents an important "prototype" of the possibilities for handling short hardwood lumber in Ontario, as described in the Proposed Technology and Systems section.

Another hardwood mill visited took logs of various lengths and sawed them into pallet material. The operators do not separate higher grade logs for pallet material. Consequently, high grade material was sawn into a low value product.

LAMB, GUAY INC. Consultants also made the following observations while visiting the area:

1. Wood sawn at all New England mills had low incidence of rot, and, in general, mills were using high grade material for low value products.

2. There were no complaints concerning prices paid for either raw material or the finished products. The industry, on the whole, appears quite stable and profitable with the ability to pass cost increases onto the consumer.

3. There was little fear of wood shortages, although prices and handling costs for several species have increased substantially as distances from the mill to preferred species is increasing.

Many mills obtain a portion of their wood supply from various national forests. There is little likelihood of reduced cutting in these areas according to the mills interviewed.

Field Trips to Other Areas of the U.S.

In Pennsylvania and New York, where there is an adequate supply of raw material, there is also a corresponding lack of interest in short lumber. This area processes logs that are indigenous to the Northern U.S., such as cherry, white and red oak, and black walnut. Demand for this lumber is strong domestically, and in Europe. As a result of strength in their markets, and adequate raw material supply, there has been little interest in the utilization of short logs.

A firm in Pennsylvania started a short log operation in 1950 to supply the lithograph trade with cherry. However, this operation was discontinued due to grade problems, and an excess of shorts between 14" and 18". This firm attempted to operate a gang saw. This machinery was of German manufacture, slow, but efficient. Usage of this machine was finally discontinued, as a result of the high cost of replacement parts. The company has now returned to conventional sawing, turning for grade, and obtaining pallet stock from the cores. This firm is now investigating finger jointing. It currently operates a sawmill with circular headrig, edger, and a battery of trim saws. It burns waste and bark for steam, and sells chips.

Another Pennsylvania sawmill sawed short hardwood logs in the early 1960's. At that time, this sawmill had 10 bolter operations going. This was, however, discontinued because this firm felt that it was not able to get conscientious operators. In addition, rising cost pressures of labor and handling reduced the cost effectiveness of this operation. The company now makes squares and dowels.

Companies using the Penney bolter for short logs generally found it very labor intensive. However, when short logs required to be processed, then the Penney bolter was used. That is, in many cases, the Penney bolter was used on a standby basis. One sawmill is planning to install a flooring operation in order to effectively utilize the output of its Penney bolters. For this company, at least, the security of a market for its short lumber was perceived by management to be a priority.

The Consultants noted that many hardwood mills in Pennsylvania are experiencing profitability problems due to a weak present demand for their products. Some have gone out of business, while others have shut down temporarily due to high inventory levels.

The names of the operations visited are listed in Table 34.

TABLE 34

LIST OF U.S. OPERATIONS VISITED

1. Miles Pond Wood Products Inc., Whitefield, N.H.
2. White Mountain Wood Kraft Inc., Berlin, N.H.
3. Hanover Dowel, Bethel, Maine.
4. Saunders Bros., Westbrooke, Maine.
5. Saunders Bros., Fryeburg, Maine.
6. Isaacson Lumber, Livermore Falls, Maine.
7. Woodtek Inc., N. Anson, Maine.
8. Moosehead Mfg. Co. Ltd., Monson, Maine.
9. Lavalley Lumber Ltd., Sanford, Maine.
10. Sandborn Automated Sawmill Machinery, South Waterford, Maine.
11. Pride Mfg. Co. Ltd.
12. McMillan Lumber, Sheffield, P.A.
13. Collins Pine Co. (Kane Hardwoods), Kane, P.A.
14. Koppers Marble, P.A.
15. Oaks Lumber Co., Lucinda, P.A.
16. Kinzia Hardwoods, Tideoute, P.A.
17. Potter Lumber Co., Allegany, N.Y.
18. J.L. Yansick, Arcade, N.Y.
19. R. Mallory Lumber Co., Emporium, N.Y.
20. Johnson Bros. Lumber Co., Cazenovia, N.Y.
21. Gotchess Lumber Co., Cortland, N.Y.
22. Attica Package Co. Ltd., Attica, N.Y.
23. Fitzpatrick & Waller Co., Elliottville, N.Y.
24. Donver Inc., Killbuck, N.Y.
25. Bodher Lumber Co., Lafayette, N.Y.
26. C.B. Norton Lumber Co., Great Valley, N.Y.

4.11 Summary

In summary, during extensive interviews with sawmill operators in Eastern Ontario and the Northeastern U.S., LAMB, GUAY INC. made the following key observations:

1. The "B" and "C" mills (14 out of 102 interviewed) account for 67% of the employment, and about 78% of the total output of the mills contacted. The Consultants observed that the balance of mills contacted were very small, undercapitalized and, in many cases, only seasonally operated.

2. Sawmillers of Eastern Ontario are heavily dependent on wholesalers/brokers to market their hardwood lumber. The sawmillers have relatively little contact with end-users.

3. Most of the larger operators in Eastern Ontario are aware of the short log concept. However, these operators expressed two concerns:

   (a) that the processing of short logs is labor-intensive and costly, and

   (b) that they find a limited market acceptance for short lumber.

4. Visits in the U.S. indicated that there is an active short log/short lumber industry in the New England States. However, the short log processing was done in vertically integrated companies, where the mill was a captive operation of the end-user manufacturing facility.

5. In the Pennsylvania/New York area, an adequate supply of long logs has not encouraged the large scale development short log processing. In many instances, sawmillers who had experimented with short log processing had abandoned the effort to return to conventional methods.

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5.0 SHORT LOG TECHNOLOGY/SYSTEMS

The following section deals with short log processing technology. The results of the interviews conducted by LAMB, GUAY INC., detailed in Section 4.0, will be used to outline the current state of technology in Eastern Ontario. Interviews were also conducted with sawmillers in New England, Pennsylvania and New York to determine the extent of short log processing in those regions. As well, a personal interview was conducted with Les Industries Bourassa, a company which has a short log processing operation in Quebec.

Secondary data sources were reviewed on various short log systems and technology so that an appropriate system for Eastern Ontario conditions could be suggested.

5.1 Technology Now in Place

5.1.1 Eastern Ontario

At present, there is little short hardwood log processing capacity in Eastern Ontario. Of the 102 sawmills interviewed, only 4 mills were found to have any short log processing capability.

Two mills had small short log lines, in addition to their conventional line. These auxiliary systems were relatively unsophisticated, but allowed the mills to economically handle shorter bolts when necessary. They were not the major source of revenue for the mills and had very limited production capacity.

A third sawmill was identified as being a short log processor. The operation consisted of a short log sawmill feeding a pallet manufacturing plant. The pallet plant took 100% of the 2 MM fbm produced in 1980. The sawmill itself is relatively unsophisticated, with much of the equipment built by the operator himself, including the log deck and mill feed, as well as the headrig. The mill is equipped with a Morbark debarker, a Frick edger, a Cornell trimtable, and a Fulgham chipper. Sorting and stacking operations are performed by hand.

A fourth mill, in the planning stage, was also identified as a true short log operation. The mill plans to process only 8' logs if possible. The logs will be cut into 4' bolts by a three blade chop saw, positioned between the infeed and the debarker. The bolts will be fed to a Penney bolter, followed by a twin scrag saw. Already in place are a Keystone double arbour edger and a Forano single blade resaw. The mill is looking for a used chipper to complete the operation.

5.1.2 Pennsylvania/New York

Of the 15 operations visited in the Pennsylvania/New York region, only two contained some degree of short log processing capacity. Several other of the operations visited stated that, at one time, they had short log lines, which were too labor-intensive, and were closed down.

The first of the two short log operation mills visited had been shut down for quite some time. The line consisted of a vertical band twin scrag saw built by Forano, plus all the subsidiary equipment. The current owner is attempting to sell the line out of state.

The second mill's short log equipment is still functioning as an auxiliary line. A Penney bolter is now in place, but the owner is currently replacing it. The new equipment is an Esterer multiple gang saw of the type used in Germany to produce hardwood flooring. The owner is installing it himself, and has great hopes for the equipment.

As stated above, this is an auxiliary line that handles the shorter bolts from the conventional operation. The products that will be produced will be mostly pallet and crate stock.

This is an abundant supply of good quality timber in the Pennsylvania and New York areas. Here the short log concept is not appealing to sawmill operators. Most of the operators are aware of the technology, but see no need or incentive to get involved with short logs.

5.1.3 New England

In total, 11 interviews were conducted in the New England States. Of these, nine were found to contain short log operations. Table 35 summarizes the type of operations found.

TABLE 35

SUMMARY OF NEW ENGLAND SHORT LOG OPERATIONS

STATUS	SPECIES SAWN	PRODUCTS	MARKETS
Captive	80% ash 20% yellow birch, oak, rock maple	Furniture Stock and Chair Backs	100% to Parent Company
Captive	yellow birch, ash	Chair Backs, Road Pickets, Crutch Stock	75% to Parent 25% Open Market
Combined Operation	white and yellow birch	Dowels, Rods, and Gluepins	100% Own Use
Combined Operation	white birch pulpwood 39" to 52"	Dowels	100% Own Use
Captive	beech + hard maple	Turned Products	100% Own Use
Independent	Large variety hard and softwood	Pallet Stock	100% Open Market
Combined Operation	Large variety of hardwoods	Lumber, Gunstocks, Pallet Stock	100% Own Use
Combined Operation	yellow + white birch, beech + maple	Furniture Stock	100% Own Use
Combined Operation	white birch	Golf Tees, Wooden Toys	100% Own Use

As can be seen in Table 35, the majority of short log operations have an association of some kind with a manufacturer. The sawmills are essentially captive operations supplying raw material for the manufacturing facility. This provides a market for virtually the entire sawmill production. The only sawmill that does not have a direct association is located very close to a number of independent manufacturers. Two of the above mills were selected as typical operations, and their production lines will be described in detail.

The first mill receives logs from a 35-mile radius of the mill site. Production from the Morbark debarker is 12,000 fbm per day with the same man operating the log infeed and debarker. Logs are cut into 50" or 100" bolts by an electric power saw, depending on quality.

All 50" logs are directed to the Penney bolters, while 100" bolts proceed through the Chase short log carriage with circular headrig and top saw. The carriage is capable of handling logs up to 42" in diameter. Flitches from the bolter are resawn into 2" X 2" squares. Headrig production is sawn into 8" flatstock for chairbacks, using two Mattison straight line ripsaws, and two crosscut saws.

The manager of the operation feels that with the introduction of on site chipping, a log shortage will result. Pulp companies will harvest younger stands, and seriously deplete the growing stock, which is needed to keep the sawmill industry alive.

The second mill receives logs in random lengths, and saws them into 4' bolts with an electric power saw. A Penney bolter cuts flitches to $1\frac{13"}{16}$ which will kiln dry to 1 3/4". Production from the bolter varies with the species being sawn with beech, averaging 5,000 - 6,000 fbm per shift, and hard maple at 4,000 fbm per shift.

A nine position gang saw, working on one shift, produces enough squares, 1" and up, to supply two shifts at the mill. Squares are sorted after cutting and damaged or defective squares are resawn into shorter lengths. The resawing increases yield from 60% to 80%.

Mill managers make a large portion of their production equipment themselves, as well as purchasing "state-of-the-art" equipment when possible.

5.1.4 Quebec

A personal interview was conducted with Les Industries Bourassa, located in St. Raymond, Quebec. The present mill was built in 1964, and is regarded as one of the modern mills of its type in Eastern Canada. The sawmill is essentially a captive operation, supplying the firm's turning mill, and cannot be considered a true short log mill. The total operation employs 160 to 180 workers, with approximately 90 for the sawmill, lumber yard, and kiln operation.

The sawmill itself is composed of two Forano carriages, installed back to back. One is a regular length carriage, while the second is a 7' carriage designed to handle "short logs". The system is completed with a cross-cutting operation to produce squares, and pallet stock. The short logs that are being sawn are not salvaged logs, but rather the better quality bolts that are being cut from logs of regular length. As a rule, the maple logs going to the short bolter have a minimum diameter of 10", and at least 3" of sap wood.

The company purchases good quality Maine logs. The average Maine log yields 70.9 fbm, while logs taken from public land in their area yield only 55 fbm. All of Bourassa's logging operations are on public land.

The sawmill produces approximately 11 MM fbm annually, of which 5 - 6 MM fbm comes from the short log line. The species cut are maple 65%, yellow birch 25%, and beech and others, 10%. The output from the conventional line is sold mainly on the open market. 54% of the short log lines' output is used in the turning operation, and 46% is sold to other firms as pallets.

5.2 Discussion of Systems as Related to Eastern Ontario

The next sections of the report will discuss short log processing in Eastern Ontario.

5.2.1 Harvesting, Wood Delivery, and Other Factors

Harvesting

Harvesting of the resource and the manner and form in which the resource is delivered to the processing point or sawmill is an important consideration for a suggested short hardwood log mill for Eastern Ontario. It should be remembered that in Eastern Ontario, 3 of the "B" mills interviewed stated their main source of wood was their own, or crown limits, 2 from private lands. All depend for a major part of their log haul on public roads.

Mills can receive raw material in tree lengths, as conventional sawlogs, or as bolts.

Tree Length System

There is no question that the tree length system, whereby the whole stem is brought to a central mechanical slasher, provides the best opportunity to optimizing the cutting of various products, veneer logs, sawlogs, and pulpwood. However, because the tree length system requires a large Class "A" mill, located at, or close to

an adequate supply of quality timber, it is not applicable to the mills under consideration in Eastern Ontario.

Sawlog System

The conventional system, producing sawlogs at the stump or roadside, is the present method employed by all the medium-sized sawmill logging operations in Eastern Ontario. Trees are bucked with a chain saw by woodsmen who may not be conversant nor concerned with the end product. Often faulty bucking decisions are made. Transportation of these sawlogs is not a problem.

However, at the mill, problems arise. The whole mill is geared to long logs, and long lumber, so any material 8' or less in either log or lumber form creates problems. Mill owners in Eastern Ontario, who have had the good fortune or imagination to locate a special market for shorts, have made arrangements to have the short lumber pulled out of the main system, and processed separately.

An alternative followed by Les Industries Bourassa in Quebec and mills surveyed in New England and Pennsylvania is to bring sawlogs to the mill and buck them up into 8' or 4' bolts for further processing. In LAMB, GUAY INC.'s opinion, these mills do not meet the criterion of a short log mill in the framework of Eastern Ontario's requirements. Logs at Bourassa are specially selected from U.S. sources for furniture dimension stock or in the case of the New England mills from white birch for the dowel market. These logs are restricted both to quality, and a minimum size.

Bolts

A bolt is an 8' log and is the accepted length for hardwood pulpwood in Eastern Ontario. It is normally produced from the poorer and smaller part of the tree after sawlogs have been cut out. However, in many cases where the potential sawlog cut in the stand is small, many suppliers prefer to produce "bush run" pulpwood to avoid the trouble of making and sorting out sawlogs. Transportation is no problem, as bolts may be loaded lengthways, or sideways.

Sawing bolts requires a special mill operating at high speed with a minimum of handling, and emphasis on productivity, rather than grade. A market for the product completely different to that for long lumber is required, as is an assured market for chips.

This type of mill will be considered in more detail in the next section, since it is considered that such a mill might provide the answer for Eastern Ontario in utilization of short logs.

Table 36 below considers the three log delivery systems just discussed as they apply to Eastern Ontario. In LAMB, GUAY INC.'s opinion, the most appropriate system for efficient processing of short logs, is 8' bolts brought to a special short log mill for sawing.

TABLE 36

THREE LOG DELIVERY SYSTEMS AND THEIR SUITABILITY TO EASTERN ONTARIO

SUITABILITY TO EASTERN ONTARIO	TREE LENGTH SYSTEM	CONVENTIONAL SYSTEM	BOLT SYSTEM
Wood Resources	No	No	Yes
Transportation	No	Yes	Yes
Processing	Yes	No	Yes
Markets	Yes	No	Yes
SUMMARY: APPLICABILITY TO EASTERN ONTARIO	No	No	Yes

5.2.2 The Short Log 8' Mill

The following paragraphs describe the general specifications and characteristics of a specialized short log mill that LAMB, GUAY INC. believes would be appropriate for Eastern Ontario conditions.

Prerequisites for Operation

Based on the information collected for this study, LAMB, GUAY INC. concludes that for Eastern Ontario short log mills, the purchase of pulpwood in 8' bolts, with the up-grading of part of this to produce rough furniture dimension, pallet stock, possibly industrial lumber and chips is most applicable. This approach is consistent with the conditions of resource supply in Eastern Ontario, and potential short lumber markets identified earlier in this report.

This conclusion is also partly based on an earlier study by W. Hall in June, 1972, entitled "Renfrew County Forest Industries" (1), and supported by observations made during the Eastern Ontario sawmill survey. The Consultants observed that sawmill owners were buying 8' pulpwood, primarily poplar, and chipping it for sale to the pulpmills.

This has led us to set out three important prerequisites for the operation of such a mill:

(a) The operator should already be a sawmill owner who, in addition to owning sufficient land for the necessary expansion, is able to purchase pulpwood. We stress the term "pulpwood" because any attempt to buy this material as short sawlogs, and impose size and other restrictions, will cause a price increase.

An operating sawmill has the debarker, yard handling equipment, millwrighting and administration already in place. Further, short lumber produced at the conventional mill, can probably be more profitably shipped over to the short log mill for sale with its products.

(b) The second prerequisite is a firm contract for chips with one of the Ottawa valley pulp mills buying hardwood. This sawmill can be regarded as either an auxiliary woodyard for the pulp mill, or as a milling-in-transit operation to give the pulp mill the product it basically requires, hardwood chips, and the contract should reflect this perception. It should be noted that at least in one case, a supplier to the Consolidated-Bathurst Mill at Pontiac, is required to separate and deliver pulpwood

(1) Hall, W.W., "Renfrew County Industries, A Wood Products Complex", Opeongo Forestry Service, Renfrew, June, 1972.

and chips according to three species groups (birch, maple/beech, and other hardwood). This should not present a problem to the short log mill, as log suppliers in the area are used to this situation. There is a definite advantage to the sawmill in receiving sorted bolts, and all that is required is sufficient chip hopper capacity to take care of the three species groups.

(c) The third prerequisite for the short log mills is the flexibility, both to receive conventional logs from the main mill and then buck to length. An example might be a 16' sawlog with 8' of fair quality grade, and the balance defective or crooked, the result is poor log making. In this case, there should be an advantage in bucking to two 8' lengths, one proceeding to the short log mill, and the other going directly to the chipper.

Flexibility should also be built in so that the green chain of the short log mill can handle short lumber developed by adjacent mills in the area. One of the problems encountered by many of the sawmill owners during the survey concerns the disposition of their short lumber since, in many cases, any amount over 20% lowered the grade when sold under NHLA rules. It is believed that many owners would welcome a mill run delivered price for their shorts, if such a market was available. This, in turn, would assist the short log mill owner in developing the necessary volume for the various markets.

Mill Handling, Layout and Equipment

(a) Bolt Sorting

Consideration was given as to whether there might be any advantage in a system of bolt grading as proposed by F. Petro of Forintek Canada Corp., as an Appendix to the Hall Report. The main justification for such a bolt grading, which was based on the exterior characteristics of the bolt was that, subsequently, the three top grades would be sawn for grade lumber using a double-cut band, and a standard 8' carriage. The bottom grade would be fed into twin saws with the subsequent passage of the cants through a double arbour edger.

Another recent study by Flann, "Sawing for Profit", [1] discussed grades in conventional lumber, and refers to the "break-even point" when lumber value covers total cost of raw material and processing, and the "marginal" when it covers only the sawing cost.

LAMB, GUAY INC. is of the opinion that any small log mill, to be viable under Eastern Ontario conditions, must have a high productivity. In fact, our visits in New York and Pennsylvania, conclusively demonstrated that it was lack of productivity per manday in this part of the mill that caused the Penney bolter and other equipment relying on grade sawing, to be retired from service.

(1) Flann, I., "Sawing for Profit", Canadian Pulp and Paper Industry, MacLean-Hunter, October, 1981.

Consequently, our proposed mill layout and equipment is based on simplicity and high productivity, and accepts the fact that some grade may be lost by doing so. Therefore, it is proposed that bolts sorted by species group, be designed either for sawing, thus diverted to the sawmill, or for chipping. This decision would be made after debarking.

The Consultants also considered the so called "System 6" concept. This is a system devised by Reynolds and Schroeder of Princeton, West Virginia, to use small logs to make grade lumber. It depends on hardwood trees being bucked into 6' bolts because studies showed that this was the maximum length suitable for reducing the effect of sweep and crook in small trees. The bolts were sawn by a two-saw scrag mill, into two slabs and 3 3/4" cants. The cant is sawn into 1" boards on a single-arbour circular gang resaw in a single pass, while the slabs are sawn and edged into 1" boards with 4" or 6" widths. End trimming to 72" completes this fast, accurate, and inexpensive sawing system.

LAMB, GUAY INC. examined this concept because upon preliminary there seemed to be no reason that the concept could not be extended to an 8' bolt, and the high speed and simplicity of the system fitted our concept. However, after further examination of the system, it was rejected for two main reasons. One, because the system is basically inflexible, being designed to utilize the 9" - 12" hardwoods, containing little or no defects, found in abundance in the Appalachian and Southern forests. Hardwood bolts, coming from Eastern Ontario, would have a much larger size range, and contain considerably more defects. The other reason is that, although the study was sponsored by the U.S. furniture industry, no hardwood mill in that country has yet proceeded with the concept.

(b) Mill Layout and Equipment

Mill layout is determined by many things: space availability, interrelation with another mill, volume to be handled, owner preferences, and other factors. Any schematic that might be devised, without knowing such factors, is difficult. Nevertheless, in line with the principles of simplicity and high productivity, the following system is proposed, based in part on a high speed dimension mill described by Bryan [1]:

Receiving Deck	: Space permitting a common deck, but separate flow lines, for long log and short log mills.
Cut-off Saw	: A cut-off saw to permit bucking of logs into bolts. Short logs would be transferred to the short log flow line.
Debarker	: One or two debarkers, according to the size of the operation. Should be possible to be controlled by one operator. Suitable logs for processing proceed to short log mill, balance direct to the wholelog chipper.
Twin Saw Headrig with 8' Carriage	: Bolts normally slabbed two sides, with the cant sent to a high speed gang saw (Esterer, maximum speed, 70 fpm), and the cants to a line bar resaw. Where surge deck to gang saw is full, sawyer has option of sending a four-sided cant to the resaw.

(1) Bryan, Forest Industries, February, 1977.

Linebar Resaw	: Resaw receives slabs and occasional four-sided cant from headrig, also lumber from trimmer conveyor equipped with a run-around.
Edger	: The edger receives lumber from either linebar resaw or headrig. Two of the three saws are moveable.
Trimmer	: Either a three or five saw trimmer, depending on the final products to be made.
Green Chain	: Sorting pockets for the various "use grades", furniture stock, pallet stock, and industrial stock, also a transfer chain to permit the feeding in of the short lumber from the main mill, or that purchased from other mills.
Chipper	: This must be a whole log chipper, capable of handling both the pulpwood bolts from the short log mill, and the slabs, edgings and trimmings from both mills.
Auxiliary Mill and Yard Equipment	: Boiler providing steam for both mills and for dry kilns, burning bark and sawdust. Filing room common to both mills. Cary-lift for feeding logs from yard to deck, or off-loading trucks, common to both mills. Fork lift trucks common to both mills.

Auxiliary Mill and Yard Equipment	: Chip storage hoppers; three, if species grouping used.
	Bark and sawdust hopper to handle surplus requirements.

Product Yield/Prices

The following product estimates have made some use of the Hall Report, although believed to be more conservative. The following assumptions are made:

- 1.87 cunits of pulpwood logs is equivalent to 1,000 fbm.

- 60% by volume of the short logs will be suitable for processing, if industrial lumber is produced; 40% by volume will be directly processed to chips.

- Of this 60% of short logs, 50%, e.g. 30% of the total will be in lumber, the balance in residue. Thus:

  - .56 cunits will be processed into lumber.
  - 1.31 cunits will be chips, sawdust, and bark.

- Of these .56 cunits, 40% will be component (furniture dimension stock), 35% will be pallet stock, and 25% will be industrial lumber.

  - 40% x .56 cunits = .22 cunits = 120 fbm furniture dimension stock.
  - 35% x .56 cunits = .20 cunits = 110 fbm pallet stock.
  - 25% x .56 cunits = .14 cunits = 70 fbm industrial lumber.

- Of the residues, about .88 cunits would be chips, the balance of .43 in shavings and bark.

Capital Costs

This cost estimate for a 20 MM fbm hardwood mill is based on building and mill layout, similar to that described in the previous section, with equipment common to both mills added in some cases, e.g. boiler.

LAMB, GUAY INC. has checked with the individuals concerned with the installation of this particular mill, which was a turnkey operation, and they state that at today's prices, the capital cost would be $2,000,000. However, this can, at best, be regarded as a ball park figure, and much would depend on the availability of local equipment and manpower to install it.

A rough estimate of capital costs would be as follows:

Building (about 15,000 sq. ft.) and Receiving Deck	$ 300,000
Cut-Off Saw (Purchase and Installation)	20,000
Debarker, and Whole Log Chipper (Purchase and Installation)	250,000
Conveyers, Transfers for Residue, Slabs & Chips	70,000
Twin Saw Headrig (Purchase and Installation)	25,000
Infeed and Outfeed	20,000
Line Bar Resaw (Purchase and Installation)	35,000
Infeed and Outfeed, Conveyors & Transfer	25,000
Edger (Purchase and Installation)	55,000
Infeed and Outfeed and Transfers	30,000
Trimmer	20,000
Green Chain, Boardwalk and Building	125,000
Auxiliary Mill and Yard Equipment	
Boiler (Purchase and Installation) including Steam Heating Facilities	500,000
Filing Room and Equipment	45,000
Yard Equipment	240,000
Sprinkler System	200,000
	$1,960,000

5.3 Summary

In summary, LAMB, GUAY INC. made the following observations.

There is little short log hardwood processing capacity in Eastern Ontario. Of the 102 sawmills interviewed, only four were found to have any short log processing ability.

The extent of short log processing in the United States varied from region to region. In the New England States, due to the particular industry structure in that area, numerous short log operations were encountered. However, these were usually captive mills. In Pennsylvania/New York, there was little capacity or interest in using short logs.

In assessing the processing options, which are appropriate to Eastern Ontario conditions, LAMB, GUAY INC. concludes that only a specialized short log mill would be productive enough to be viable. This type of mill should be set up to purchase pulpwood in 8' bolts, with upgrading of part of this to produce rough furniture dimension, pallet stock and possibly industrial lumber The balance of the material would be chipped.

The prerequisites for such a specialized short log hardwood mill are threefold:

- First, the operator should be a sawmill owner who already has in place many of the purchase relationships and facilities/ equipment required.

- The second prerequisite is a firm pulp chip contract.

- The third prerequisite is flexibility: to be able to shift conventional logs from the main mill to the short log mill by bucking to length as necessary. In addition, the green chain should be able to handle short lumber purchased from nearby mills, in order to develop the necessary volume for various market segments.

LAMB, GUAY INC. estimates the capital costs for a short log hardwood lumber mill, operated as part of a conventional mill, to be in the order of $2,000,000.

LAMB, GUAY INC.'s suggested equipment and processing procedure stresses that a short log mill, under Eastern Ontario conditions, must have high productivity. The layout/equipment must stress simplicity, and accept the fact that some grade may be lost by doing so.

The specific mill layout for a mill considering short log processing can only be determined by specific facts of that operation. These facts include space availability, interrelation with another mill, markets to be served, volume to be handled, and owner preferences.

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6.0 OBSERVATIONS AND IMPLICATIONS

The objectives of this section of the report are to summarize the observations made by the Consultants during the study process, and to draw implications from these observations in relation to opportunities for increased short hardwood log processing in Eastern Ontario.

This Section, therefore, begins the necessary analytical/synthesis process required before setting out LAMB, GUAY INC.'s recommendations, which can be found in Section 7.0.

Each element of the study process conducted by the Consultants will be assessed: overall hardwood industry in Canada, market analysis, Eastern Ontario sawmill industry structure, short log processing technology.

6.1 Hardwood Industry in Canada

OBSERVATIONS	IMPLICATIONS
Total hardwood lumber production has increased very little since 1950. There are, however, marked year-to-year fluctuations of ± 30%. Hardwood lumber production was 482 MM fbm in 1979.	
Ontario and Quebec account for about 85% of total production, year-to-year. Maple accounts for 60% of production.	Ontario and Quebec are clearly the "heart" of the Canadian hardwood lumber industry. Any policies to improve the production/viability of the industry in those provinces will impact the great majority of the industry.
Apparent consumption of hardwood lumber in 1979 for Ontario was 231.9 MM fbm, and Quebec, 231.6 MM fbm. Total consumption was 514 MM fbm in Canada.	
Eastern Ontario accounts for about 37% of total Ontario hardwood lumber shipments.	Eastern Ontario is important to the total Ontario hardwood industry.
Overall, Canada is a net importer of hardwood lumber. The major hardwood species imported to Canada is oak for the furniture and case goods industries. Quality oak logs are not available in Canada.	The major hardwood species imported to Canada cannot be replaced currently because the quality required by industry is not available.

6.2 Market Analysis

OBSERVATIONS	IMPLICATIONS
The relevant geographical markets to consider for Eastern Ontario hardwood lumber sales are Ontario, Quebec, and the Northeastern U.S. LAMB, GUAY INC. estimates that shipments to these regions from Ontario and Quebec in 1979 were about 319.9 MM fbm. About 82% of the above shipments were within Ontario and Quebec.	Eastern Ontario hardwood sawmills are most likely to find initial market opportunities for short hardwood lumber in the traditional hardwood lumber markets of Ontario and Quebec.
Household furniture (30.6%), and millwork/flooring (24.0%), are the most important end-use industries for hardwood lumber. Wood containers, pallets, skids (16.3%) is the next largest end-user category.	Household furniture, millwork/flooring, wood containers/ pallets/skids are the most important end-use industries, and should be considered the initial targets for short hardwood lumber.
Household furniture manufacturers interviewed indicated that a good proportion of their hardwood lumber requirements could be met by short hardwood lumber. However, they would be reluctant to consider buying more shorts unless they were sorted for high quality. Also, to use more short lumber would require that they eliminate in-house cutting operations, in which they have substantial investment.	There are market opportunities for short hardwood lumber among household furniture manufacturers, the largest hardwood lumber end-user segment. However, this would require revision of grading rules appropriate to the industry, and not based on NHLA long lumber grades.

OBSERVATIONS	IMPLICATIONS
Millwork and flooring manufacturers expressed little interest in buying short hardwood lumber. Millwork plants, in particular, derive part of their income from dimension machining, and have little interest in this being performed by outside suppliers.	Millwork/flooring is the second largest end-user group for hardwood lumber, however, due to lack of purchaser interest, market penetration may be difficult.
Pallet and skid manufacturers indicated that a substantial proportion of their needs could be satisfied by short hardwood lumber. Also, the lumber need not be of high quality.	Pallet and skid manufacturers represent the third largest end-user hardwood lumber segment. Their requirements are such that they represent a good primary target market for short hardwood lumber.
Wholesalers and brokers are important to the distribution of hardwood lumber. Interviews revealed a reluctance to increase their handling of short hardwood lumber. Distributors indicated extensive end-user education would be necessary to find markets for short hardwood lumber.	Distributors contacted confirm end-user interviews, which indicate that the potential market penetration for short hardwood lumber is probably limited.
Overall, LAMB, GUAY INC. estimates that perhaps an additional 17% of total hardwood lumber shipments in the defined market regions could perhaps be converted to exclusive short hardwood lumber usage. This represents a potential of about 54 MM fbm (1979) in the defined regions.	While the increased penetration potential for short hardwood lumber is modest for each end-use industry, the total volume potential should be attractive to Eastern Ontario hardwood sawmillers.

OBSERVATIONS	IMPLICATIONS
Eastern Ontario currently supplies about 16% of Canadian hardwood lumber.	Eastern Ontario sawmillers should not expect to achieve the full potential of 54 MM fbm, as they will face competition for short hardwood lumber opportunities from other hardwood lumber producing regions.

6.3 Eastern Ontario Sawmills

OBSERVATIONS	IMPLICATIONS
Seventy-nine percent of the sawmill industry in Eastern Ontario is comprised of small operations producing less than 2 MM fbm per year.	These small firms are typically undercapitalized, making any conversion to new sawmilling technology unlikely.
Larger mills have expanded at least once since start up. Small mills typically have not.	Larger mills are more prepared to undertake necessary expansion, and are probably in a better financial position to consider changes in their processing technology.
The 5 "B" mills contacted employed an estimated 42% of the total employees of the 102 mills surveyed.	Policy action directed at larger firms will more likely serve to preserve/enhance the employment situation in the industry than similar incentives applied to smaller firms.
The 14 "B" and "C" mills produce an estimated 78% of total Eastern Ontario hardwood lumber output.	Larger mills are extremely important to total regional production.
The wholesaler/broker is extremely important to Eastern Ontario sawmills in bringing hardwood lumber to market.	Policy development must take into account the relative lack of contact that Eastern Ontario sawmills have with end-users.
Many sawmill operators suspect that short log processing is too labor intensive.	Short log processing technology must have shown to be able to overcome this problem.

OBSERVATIONS	IMPLICATIONS
Many sawmill operators feel that a lack of market acceptance is a barrier to increased production of short hardwood lumber. Current lumber grading rules inhibit the production/sale of short hardwood lumber.	Current grading rules need to be re-examined to see if they are appropriate to all end-user industries.
The active short log/short lumber industry in the New England States consists primarily of captive sawmills, integrated with specific end-users.	"Stand-alone" short log sawmills were generally not evident in the U.S. in areas visited by the Consultants. The U.S. experience does not provide clear answers for Eastern Ontario.
In the New York/Pennsylvania area, short log processing has been tried and mostly abandoned, as adequate supplies of longer logs are available.	

6.4 Short Log Technology

OBSERVATIONS	IMPLICATIONS
There is little short log processing being done in Eastern Ontario. Only four of the 102 mills contacted were involved to any extent. There are no clear lessons in regard to technology in the Northeastern U.S. Mills visited in New England were captive. Mills in New York/Pennsylvania are not active in short log processing. The Consultants observed that the most appropriate type of short log mill for Eastern Ontario would probably be one that could accept 8' pulpwood bolts which are currently already being harvested in the area. This type of mill would have to be specialized to ensure high productivity. This type of mill would upgrade part of the material to furniture dimension, pallet stock and industrial lumber. The balance would be chipped. There is no such operation currently in existence in Eastern Ontario.	The most appropriate technology for an independent short log mill that could operate under Eastern Ontario conditions can only be determined on a case-by-case basis with individual operators. There is a need to more specifically investigate the viability of a specialized short log processing mill as it relates to specific individual mill operators in the area.

OBSERVATIONS	IMPLICATIONS
The capital costs to build a specialized short log mill, to run in conjunction with a conventional operation are about $2,000,000.	Only a very few operators in the Eastern Ontario region have sufficient capital to undertake the building of a specialized mill. Government incentives could, perhaps, aid in the necessary capitalization of such a project. A specific feasibility study would be required to ascertain whether the return from a short log mill, would be sufficient to warrant the capital cost.

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7.0 RECOMMENDATIONS

7.1 Situation Summary

Hardwood Lumber

The production of hardwood lumber in Canada has remained relatively static since 1950. Production was 601 MM fbm in 1980, of which Ontario represented 44.5%, and Quebec, 40.8%. Canada is a net importer of hardwood, primarily of species such as oak, where quality logs in abundance are not readily available in Canada.

Eastern Ontario has traditionally represented about 35% - 40% of Ontario hardwood production.

Apparent consumption of hardwood lumber in 1979 for Ontario was 231.9 MM fbm, and Quebec, 231.6 MM fbm. These two regions traditionally account for about 90% of consumption in Canada. Long-term forecasts for hardwood lumber in Canada to the year 2000 indicate an increase of about 4.2% per year, with imports increasing, resulting in a moderate long-term domestic production increase of about 2.7% per year, assuming log availability and based on economic conditions.

Markets

The Consultants conclude that the market opportunity for increased usage of short hardwood lumber is somewhat limited.

Within Ontario and Quebec, including exports to Northeastern U.S., the Consultants estimate that total hardwood shipments from Ontario/Quebec mills were about 319 MM fbm in 1979. Extensive end-user interviews indicate that a maximum incremental potential conversion to short hardwood lumber might be in the order of 17%, or about 54 MM fbm.

This conversion factor must be understood in the context that both end-users and brokers/wholesalers indicated little interest in increased supplies of short hardwood lumber. They are basically satisfied with longer lumber.

Looking at specific end-use industries, the household furniture industry is estimated to account for about 30.6% of the hardwood lumber consumed in the defined regions. This is the biggest segment, and interviews suggest these types of manufacturers would accept modest increases in supplies of short hardwood lumber under certain specific conditions.

The other industry which offers potential for accepting more short hardwood lumber are the pallet/skid and wood container manufacturers. This is the third largest segment (16.3% of estimated consumption). Interviews suggest they could/would accept increased quantities of low grade short hardwood lumber.

Investigation of the market mechanism for hardwood lumber indicated that the broker/wholesaler plays an important role between mill and end-users. Therefore, to identify specific furniture manufacturers, and pallet manufacturers interested in short lumber, it would be necessary for mills to rely heavily on intermediate distributors.

Eastern Ontario Sawmills

Extensive interviews with Eastern Ontario hardwood sawmills revealed there are only 5 - 15 who have the scale, financial resources, and interest necessary to be candidates for short hardwood log processing. However, these "B" and "C" mills contacted (14 out of 102), account for about 67% of the employment, and 78% of the total output of mills interviewed. Therefore, government policy directed at these few larger mills will have the effect of impacting the majority of the hardwood sawmill industry in Eastern Ontario.

Visits to mills in Northeastern U.S. did not provide clear direction for Eastern Ontario. Short log mills in the New England States are specialized captive mills for specific end-users. Mills in the New York/Pennsylvania area have little interest in short log processing due to sufficient supplies of conventional sized logs. Many have reverted to long log processing after trying short log technology.

Short Log Technology

The Consultants have concluded that the only type of short log operation which makes sense for Eastern Ontario conditions would be for a conventional sawmiller to operate a specialized mill which could accept 8' pulpwood bolts. This mill should emphasize simplicity and productivity. Selected pulpwood bolts would be sawn for furniture dimension, pallet stock, and industrial lumber. Remaining bolts would be chipped. This mill could also buy short hardwood lumber from other mills in the area, and aid in marketing this otherwise unsaleable material.

The capital costs of the type of operation proposed by the Consultants would be in the vicinity of $2,000,000. This severely limits the number of Eastern Ontario sawmillers who could realistically contemplate building such a facility. Only a detailed feasibility study(ies) could determine whether such a mill would provide adequate returns to a specific sawmiller, in relation to the market opportunities described previously.

7.2 Conclusions

From the previous Situation Summary, it is clear that the opportunity for increased hardwood short log processing in Eastern Ontario is limited.

Therefore, LAMB, GUAY INC. feels that the most appropriate action on the part of the Forestry Sub-Committee, if it wishes to encourage increased short log processing, is to approach a few of the larger sawmillers to solicit their interest in proceeding to more specific feasibility investigations. The data presented in this report, of course, can be used as background to specific feasibility studies.

The Committee should also ensure that if such investigations are positive, that appropriate government incentives are made available to individual operators.

The Committee can also aid as a catalyst to marketing by soliciting interest in short hardwood lumber usage among selected end-users, and the appropriate brokers/wholesalers. This will provide the necessary link between the hardwood sawmillers and the marketplace.

It is only through by encouraging a select few of the larger sawmill operators to investigate processing short hardwood logs in Eastern Ontario that the Committee can move realistically toward its goal of fuller utilization of the hardwood forests in the area.

Ministry of Natural Resources
Ontario

APPENDIX I

SAWMILL OPERATOR QUESTIONNARIE

Your file:

Our file:

May 14, 1981

TO WHOM IT MAY CONCERN

Lamb, Guay Inc. was recently selected to conduct a study of the hardwood sawmill industry in eastern Ontario and the markets for short hardwood lumber. During the course of the investigation company personnel will meet with informed individuals in both industry and government.

On behalf of Mr. P. Anslow, Regional Forester, Kemptville, may I ask you to extend to Lamb, Guay Inc. your full cooperation. The company will, in discussion and correspondence with you, provide details as to the nature of the study and the information required.

W. D. Wardle

W. D. Wardle

- EASTERN ONTARIO SHORT LOG HARDWOOD STUDY -

- QUESTIONNAIRE -

1. COMPANY _____

2. ADDRESS _____ PHONE _____

3. MILL LOCATION _____ PHONE _____

4. PERSON INTERVIEWED _____ TITLE _____

5. NO. OF EMPLOYEES _____

6. Please check size and type of building and saws:

   (a) Building: Size _____ Wood ○ Metal ○ Concrete ○

   (b) Saws: Circular ○ Size _____

   Horizontal Band ○ Size _____

   Vertical Band ○ Size _____

   Other ○ _____ Size _____

7. Identify the following characteristics that apply to your operation for the last 10 years:

   (a) Operation 10 years or more ○ Less than 10 years ○

   (b) Have been no changes ○ Expanded ○

   Specify _____

   (c) Have kiln drying facility ○ Capacity _____ FBM

   (d) Kiln located on site ○ Elsewhere ○ Specify _____

   (e) Have the following facilities: Chipping ○ Planing ○

   (f) What do you do with the following residues:

		Sell	Burn	Bulldoze
(i)	Slabs	○	○	○
(ii)	Chips	○	○	○
(iii)	Sawdust	○	○	○
(iv)	Shavings	○	○	○
(v)	Bark	○	○	○

8. What is the source of power for the sawmill?

Hydro ○ Diesel ○ Tractor ○ Other ○

9. What is the source of fuel for kiln?

Hydro ○ Gas ○ Oil ○ Wood ○ Other ○

10. Please identify the following products and percentages of your operation:

Dimension Lumber _____% Rail Ties _____%

Pallet Stock _____% Other _____% Specify _____

11. Which of the following categories best identify your sawing operations:

Sawing for Resale _____% Custom Sawing _____%

Sawing for Own Use _____% Other _____% Specify _____

12. What are the sources of logs sawn:

(a) Crown Land _____% Own Limits _____%

(b) Private Land _____% Other _____% Specify _____

13. Please indicate the equipment and make pertaining to your organization?

Equipment	Make	Size
Log Deck and Mill Infeed		
Debarker		
Headrig		
Carriage		
Edger		
Resaw		
Trimtable		
Sorter		
Stacker		
Chipper		
Sawdust Disposal		
Bark Disposal		
Filing Room		
Maintenance Shop		

14. What is the:

(a) Capacity of the Mill _____ Million FBM

(b) Production in 1979 _____ Million FBM

1980 _____ Million FBM

1981 _____ Million FBM

(c) Average Daily Production _____ FBM

(e) Months Per Year of Operation _____

15. Please check and fill in the following Table where applicable to your operation:

Species	% of Operation	Average Log Size in			Average FBM Per Log
		Top	Butt	Length	
Yellow Birch					
White Birch					
Hard Maple					
Soft Maple					
Red Oak					
White Oak					
Ash					
Beech					
Elm					
Basswood					
Other Hardwood					
Softwood					

16. What heavy equipment do you use to handle logs and lumber, etc.

(a) Front-end Loader _____ Make _____ Size _____

(b) Fork Lift _____ Make _____ Size _____

(c) Tractor _____ Make _____ Size _____

(d) Other _____ Make _____ Size _____

17. Where do you store sawn lumber:

Outside ○ Open Shed ○ Warehouse ○

Ship at Once ○ Other ○ Specify _____

18. Which of the following personnel, and how many do you have for your sawmill operation:

Management _____ Yard Workers _____

Supervisory _____ Kiln Operators _____

Sawmill Workers _____ Shipping _____

Other _____ Specify _____

19. Is your product sold to:

Consumer ○ Own Use ○ Custom Sawing ○

Brokers ○ Names _____

Wholesalers ○ Names _____

Manufacturers ○ Names _____

20. How do you ship your product:

By Rail ____ % By Transport ____ % Own Truck ____ %

Other ____ % Specify _____

21. Over the next five years, what are your anticipated sales:

Increase ____ % Decrease ____ %

22. Please give your comments on changes that could be implemented to improve the hardwood and short log sawmilling industry:

_____

_____

_____

_____

_____

_____

_____

_____

_____

SKETCH SAWMILL SIZE AND SHAPE

APPENDIX II

OUTLOOK FOR THE NORTH AMERICAN MARKET FOR SHORT HARDWOOD LUMBER

WHOLESALER/RETAILER INTERVIEW GUIDE

1. NAME OF OPERATION _____
   ADDRESS _____
   _____
   _____
   _____

2. NAME OF PERSON INTERVIEWED _____
   TITLE _____

3. HISTORY OF BUSINESS FOR LAST FIVE (5) YEARS (EXPANSION, START-UP, ETC.)
   _____
   _____
   _____

4. GEOGRAPHIC AREA SERVED

(A) CANADA	% OF HARDWOOD LUMBER SALES	% BOARD FEET
Ontario		
Quebec		
Atlantic Provinces		
West		
(B) U.S.A.		
Northeast		
North Central		
South		
West		

...../2

5. MARKET INFORMATION

YEAR	$ SALES HARDWOOD LUMBER	SPECIES IN STOCK	GRADES	SPECIES AS % TOTAL SALES
1979				
1980				
1981				

6. CHANNELS OF DISTRIBUTION

(A) TYPES OF CUSTOMERS

	CONTRACTOR	DO-IT YOURSELF	RETAIL	INDUSTRIAL
% OF HARDWOOD LUMBER SALES				
TYPE/QUANTITY OF HARDWOOD SPECIES				
GRADES				

(B) CUSTOMER PROFILE

			% OF HARDWOOD LUMBER SALES
MANUFACTURERS OF:	(i)	Household Furniture	
	(ii)	Kitchen Cabinets	
	(iii)	Custom Millwork	
	(iv)	Architectural Millwork	
	(v)	Pallets and Boxes	
	RETAILERS		
	MISCELLANEOUS (SPECIFY)		

7. (OUTLET'S) PURCHASING CRITERIA SPECIFY:

- ☐ GRADE
- ☐ WIDTHS/LENGTHS
- ☐ PRICE
- ☐ KILN DRIED/AIR DRIED
- ☐ PURCHASE CERTAIN SPECIES FROM ONE (1) OR MORE AREAS

8. SALES METHODS USED:

	# OF OUTLETS	# OF PERSONNEL
☐ OWN SALES FORCE		
☐ COMMISSIONED SALES AGENTS		
☐ COMMISSION RATES		

(FOR WHOLESALERS ONLY)

NAME OF CUSTOMER	LOCATION	% OF SALES	FREQUENCY OF PURCHASE	LUMBER SALES

9. HARDWOOD LUMBER SALES OUTLOOK:

   (A) % ANNUAL DECREASE/INCREASE OVER NEXT FIVE (5) YEARS _____

   (B) TYPE OF SPECIES INCREASE/DECREASE OVER NEXT 5 YEARS _____

   _____

   (C) $ EXPLAIN TRENDS _____

   _____

   _____

10. IS THERE A MARKET FOR SHORT HARDWOOD LUMBER?

   (A) WHERE - SPECIFY _____

   _____

   (B) MARKET SIZE - ($ OR BOARD FEET) _____

   _____

   (C) AMOUNT YOU WOULD SELL/PURCHASE FOR NEXT 5 YEARS?

   _____

   _____

11. GENERAL COMMENTS

_____

_____

_____

_____

_____

_____

_____

_____

_____

APPENDIX III

EASTERN ONTARIO SHORT LOG STUDY

END-USER INTERVIEWS

NAME OF COMPANY:_____ NAME OF CONTACT:_____

LOCATION:_____ TELEPHONE NUMBER:_____

1. Do you operate your own sawmill? Yes _____ No_____

2. Products manufactured:
   - O Furniture
   - O Pallets
   - O Turnings
   - O Flooring
   - O Other - Spficfy:_____

3. Number of employees:_____

4. Sales in 1979:_____, 1980:_____, 1981:_____.

5. Where are products sold? By region: _____ (%)
   _____ (%)
   _____ (%)

6. Amount of hardwood lumber used in 1979:_____m fbm; 1980:_____ m fbm; 1981:_____ m fbm.

7. Do you buy your lumber a) Graded _____ b) Mill run _____

8. Do you buy your lumber
   - a) Accurately sized (Accurate dimension) O (%)
   - b) Approximately sized (Rough dimension) O (%)
   - c) Unsized (Regular) O (%)

9. What percentage of the hardwood lumber you use is dimension lumber?

1979_____% 1980_____% 1981_____%

10. Types of hardwood lumber used:

Yellow Birch	____%
White Birch	____%
Hard Maple	____%
Soft Maple	____%
White Oak	____%
Ash	____%
Beech	____%
Elm	____%
Basswood	____%
Poplar	____%
Other _____	____%
_____	____%

11. When you buy hardwood lumber,

a) Who do you buy it from?
- ○ Wholesaler
- ○ Broker
- ○ Sawmill (own)
- ○ Sawmill (other)

b) Where is/are your supplier/s located?_____

c) Who provides the truck to transport the lumber?_____

d) Are you satisfied with the quality of the wood you purchase? Yes____ No____

e) Are you satisfied with the price of the wood you purchase?
- ○ Too low
- ○ Too high
- ○ About right

12. When you buy dimension lumber:

a) Do you have the same supplier as for your hardwood lumber? Yes____ No____

Type:_____ Location:_____

b) Are you satisfied with the quality of the dimension lumber? Yes____ No____

c) Are you satisfied with the price? Yes_____ Too high_____ Too low_____

d) Do you need more labour to handle the dimension lumber? Yes____ No_____

How many:_____

13. Do you feel that the NHLA grading rules are appropriate for dimension lumber? Yes ____ No ____

Comment: _____

_____

_____

14. Would you be interested in purchasing dimension lumber graded to meet your specific needs? Yes ____ No ____

Comment: _____

_____

_____

15. What criteria are most important to you? Please rank:

____ Wood type
____ Quality
____ Security of supply
____ Dimensions
____ Price
____ Other _____
____ _____

16. What premium would you be prepared to pay for appropriately graded dimension lumber? _____%

17. What do you currently pay, on average, for the hardwood lumber you use?

Yellow Birch	$
White Birch	$
Hard Maple	$
Soft Maple	$
White Oak	$
Ash	$
Beech	$
Elm	$
Basswood	$
Poplar	$

Specify F.O.B. Supplier _____ Your operation _____

18. What percentage of the factory door cost of the finished product do the following represent?

1)	Labour	____ %
2)	Overhead	____ %
3)	Lumber	____ %
4)	Energy	____ %
5)	Other	____ %
	TOTAL:	100 %

19. Please list the advantages or disadvantages of using dimension lumber.
eg: Lower price, better cost control, less wastage, lower inventories of raw materials, etc.

ADVANTAGES: _____

DISADVANTAGES: _____

_____

20. Why do you not use more dimension lumber than you do?

_____

_____

_____

21. Would you consider having your dimension stock accurately machined to your specifications by an outside supplier? Yes ____ No ____

Comment: _____

_____

_____

22. What machinery do you use to handle and process dimension lumber?

_____

_____

_____

23. GENERAL COMMENTS: eg. How much more dimension lumber would you use if all your requirements (?) were met?

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